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Electrical Contracting

September 1932

With Which Is Incorporated
The Electragist



THE DIFFERENCE IN COST IS SO LITTLE

LABOR COSTS VARY SO . . .

that **SHERAROD** SHOULD ALWAYS BE USED

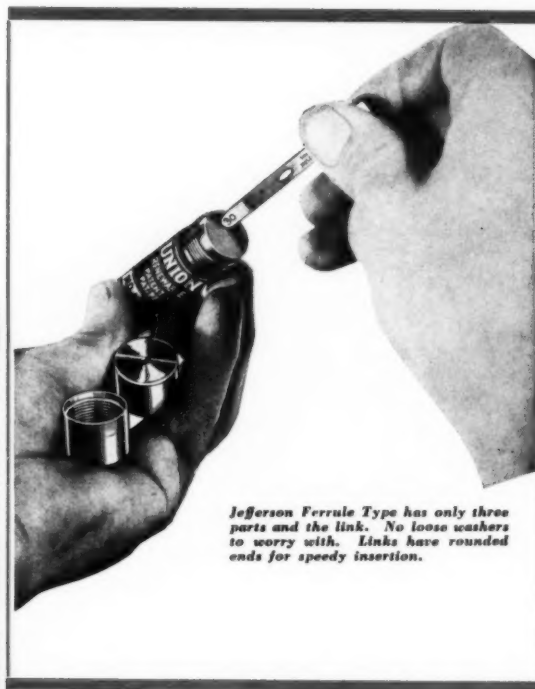


National Electric Products Corporation

SUBSIDIARY PHILPS BROS. CORPORATION
Pittsburgh, Pa.



Proved Protection with Proved Fuses



Jefferson Ferrule Type has only three parts and the link. No loose washers to worry with. Links have rounded ends for speedy insertion.

At left: Jefferson Knife Blade Fuses are renewed speedily. Only one cap to hold. Loosen studs a little and hook in the link.

Never-failing Protection...Needed More Than Ever Before

Today, with inventories so low, ability to deliver is the vital factor in getting orders. Thus uncertain protection of electrical circuits is likely to prove even more disastrous than usual. No company can afford risking the loss of a single order, or the goodwill of a single customer.

Jefferson (Union) Renewable Fuses never fail to protect—providing, of course, reasonable care is used by installing the proper capacity of fuse. Not only are they dependable, they save time in renewals because they are so

simple and are designed for speed. And they are vented by exclusive methods so that they withstand repeated blowouts—low cost.

Remind your customers of these obvious truths. See that every circuit is inspected to make sure the proper capacity fuse is installed. Make these suggestions and you will find that Jefferson Fuses are one of the liveliest lines you handle.

JEFFERSON ELECTRIC COMPANY
Bellwood (Suburb of Chicago) Illinois

JEFFERSON UNION RENEWABLE FUSES

VOLUME 31
NUMBER 11

electrical contracting

WITH WHICH IS INCORPORATED THE ELECTRAGIST

S. B. WILLIAMS, EDITOR AND GENERAL MANAGER

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TIONAL PUBLISHERS' ASSO-
CIATION. ALSO PUBLISHERS
OF ELECTRICAL WHOLESAL-
ING AND MILL SUPPLIES.

STEELTUBES

PROTECTS THE CIRCUITS IN THIS MODERN MARKET BUILDING

The Biddle Street Market,
St. Louis, Mo. Albert Osburg,
Architect; Art Electric Co.,
Electrical Contractor; mate-
rial furnished by the Glasco
Electric Co., St. Louis, Mo.



IN the New Biddle Street Market, at St. Louis, the Department of Buildings and Bridges sought the most modern material . . . that would give them the most permanent building, making the most of every dollar of expenditure. For electrical conduit they selected Steeltubes . . . the conduit that is in step with today's building practice. In this building 95% of the wiring is in Steeltubes. More than 12,000 feet were used.

Steeltubes is the latest development in electrical conduit . . . designed especially for the electrical industry. It is made of tough, open-hearth steel . . . electrically welded.

More than 30,000,000 feet of Steeltubes have been installed . . . in public buildings, homes, apartments, factories, and central stations. It's popular among progressive contractors, because it does make the electrical dollar go further . . . insuring a better wiring job . . . leaving more margin for additional outlets. Get the facts about Steeltubes from an authorized jobber. Figure this modern conduit on your next wiring job.

Electrical Division

STEEL AND TUBES, INCORPORATED

The World's Largest Producer of Electrically Welded Tubing
CLEVELAND > > < < OHIO

A UNIT OF REPUBLIC STEEL CORPORATION



STEELTUBES

T H R E A D L E S S T H I N W A L L C O N D U I T

good news

PREDICTIONS have been made so freely in the past regarding the turning point of the depression that one hesitates now to make any forecasts. Nevertheless the publishers of ELECTRICAL CONTRACTING believe that there is enough of encouragement in the news of the day to make for optimism rather than pessimism.

THE first encouraging factor is the rise in wholesale prices of many commodities. These advancing prices seem to be the result of a natural buying movement and not that of an artificially pegged market. It was generally conceded that there could be no return of buying confidence on a falling market. Under such conditions buying naturally was day-to-day. A rising market on the other hand encourages purchases for stock.

The second bit of encouragement comes from the stock market. There are many reasons advanced for this recent rally but whether it is an artificial or a free movement the higher prices are bound to have a favorable effect upon banking and credit. It should not require much more of an advance to cause bankers to start releasing capital that had been kept ultra-liquid.

The third piece of good news comes in the report of the ease with which a number of large power companies have been able to sell refinancing issues. Many utilities have hesitated to make any expenditures so long as the fear of refinancing was over their heads. That fear has been wiped away and the result has been the placing of some orders that had been held back for some time.

In line with the foregoing comes the news that the falling trend of power production seems to have been

altered in many places to an improved condition that is better than would be warranted by mere seasonal conditions.

The papers now contain reports from various railroads showing a gain in transportation. This, like power production, is fundamental because it reflects improved conditions elsewhere.

Finally, there have been a number of reports of improved wholesale buying and of a change in policy of some big companies with respect to purchases. An increase in wholesale buying of store merchandise is a healthy sign because it pre-supposes an increase in customer purchasing. The change in purchasing policy of a number of large corporations is an excellent indication of faith in the continuance of advancing prices.

IT may take some time for improved conditions to find their way into the new construction market but it should not take long for them to register in alterations, repairs and improvements.

ELECTRICAL CONTRACTING believes that the first place in which wiring conditions will show a decided improvement will be in industrial repairs. Work that was pushed to one side as business became bad will come out of hiding at the first sign of a sustained improvement in general business. Electrical modernization plans that have been held in abeyance will get under way just as soon as industrial executives are convinced that this improvement is not a flash in the pan.

Again, while ELECTRICAL CONTRACTING refuses to make a prediction, it does say that the smart electrical contractor will not ignore the news of the day but will renew his selling at those industrials where he knows there is work that should be done.

FIND NEW BUSINESS IN OLD BUILDINGS

Unbalanced



Reflected glare: A constant annoyance to busy workers.



Direct glare: Resulting eye-strain retards production.



Shadows: Deep and sharp, instead of flat, "smooth" and subdued.



Maintenance: Complicated. Glass-changing should be easier.

...Balanced Lighting can light the way to profitable remodelling jobs in 1932

Now's the time when enterprising contractors are out to sell re-lighting jobs. Older buildings are being remodelled to meet competition... And an installation of cheerful modern lighting—Balanced Lighting—can be the contractor's guiding light to 1932 electrical jobs.

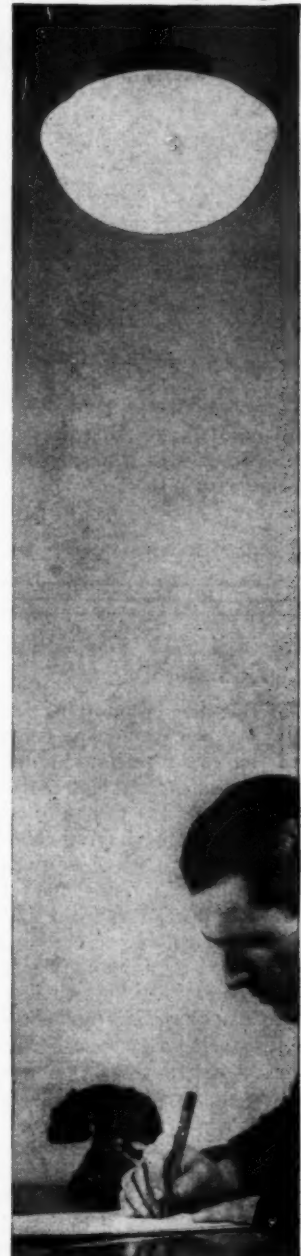
Balanced Lighting implies the wisest selection of fixtures. It implies, too, the best application of lighting units to a given set of conditions. As this may require a partial or complete redistribution of the load—other profitable electrical work may follow.

There's a quick way to get going—Just sign the coupon below. With no obligation to you, it brings a Graybar lighting specialist who can recommend the most efficient, Balanced Lighting installation for any situation. And more, it brings you the opportunity to choose from the finest selection of fixtures and glassware available.

GraybaR

OFFICES IN 76 PRINCIPAL CITIES
EXECUTIVE OFFICES: GRAYBAR BLDG., N. Y.

Balanced Lighting



Vision is at its best when all the many variable lighting factors are "balanced."

Graybar Electric Co., Graybar Building, Lexington Avenue and 43rd Street, New York, N. Y.

Gentlemen: We are interested in knowing more about BALANCED LIGHTING.

NAME..... ADDRESS.....

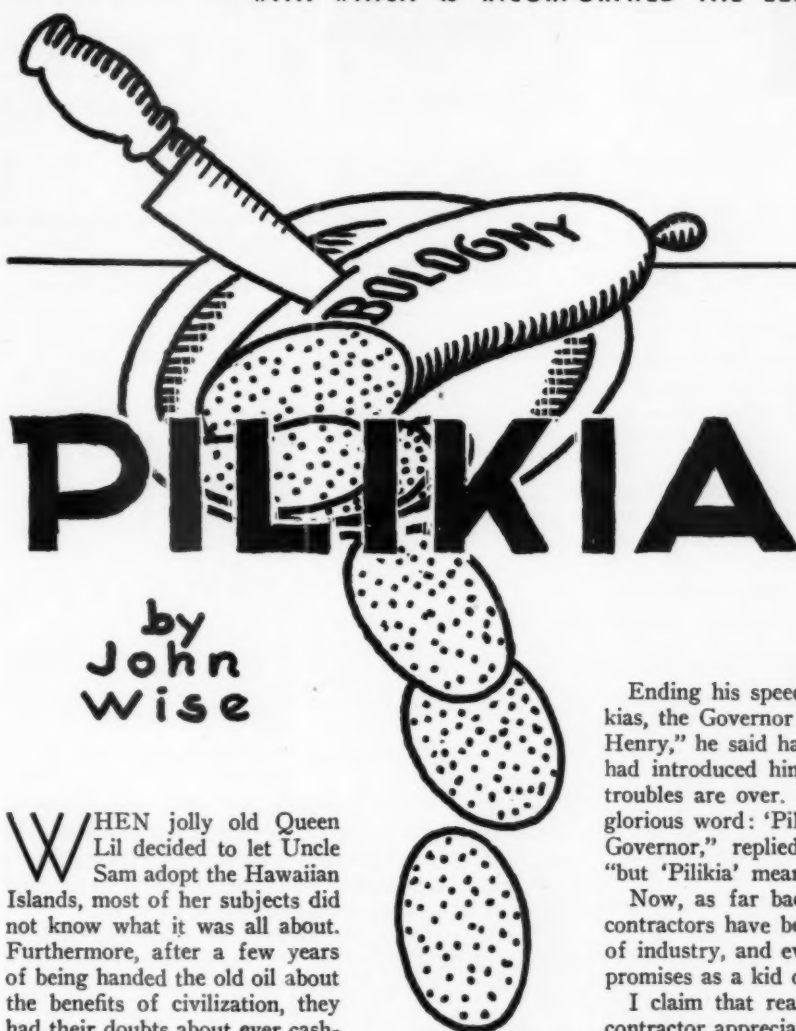
EO. 9-32

VOLUME 31
NUMBER 11

electrical contracting

WITH WHICH IS INCORPORATED THE ELECTRAGIST

SEPTEMBER
1932



by
John
Wise

WHEN jolly old Queen Lil decided to let Uncle Sam adopt the Hawaiian Islands, most of her subjects did not know what it was all about. Furthermore, after a few years of being handed the old oil about the benefits of civilization, they had their doubts about ever cashing in on the glittering promises made them by representatives of the U. S.

Then along came a new Governor-General whose knowledge of the Islands stopped with the fact that Honolulu was the home of the Hula. Like a good politician, he figured his best chance was to slip them a real, old-fashioned pre-election speech—something like Roger Williams used to inflict on the Indians around Rhode Island when he wanted a few thousand acres of nice land for a new golf course.

So the Governor duly appeared on the rostrum before an immense crowd of his Hawaiian constituents, all festooned with leis, grass skirts and ukuleles. Inspired by the interest and gaiety of the audience, he launched

into a speech of conciliation and prophesy that beggared description. And, every time he would pause for breath and a shot of White Rock, there would issue from 10,000 lusty throats a thunderous roar of: "PILIKIA! PILIKIA!" Warmed and encouraged, he rose to greater heights of promise, until Hawaii had all, and the U. S. A. had nothing left but the White House and the Army.

Ending his speech to a final crashing chorus of pilikias, the Governor was aglow with enthusiasm. "Well, Henry," he said happily to the American diplomat who had introduced him, "Judging from my reception, our troubles are over. What is the exact meaning of that glorious word: 'Pilikia'?" "I hope you don't feel hurt, Governor," replied the ambassador, swallowing hard, "but 'Pilikia' means: 'Horsefeathers!'"

Now, as far back as I can remember, the electrical contractors have been listening to captains and generals of industry, and every one of them has been as full of promises as a kid on his way to the woodshed.

I claim that real co-operation has always found the contractor appreciative and anxious to play ball with his industry. But he finds it hard to bust wide open with joy and gratitude over being fed a lot of ballyhoo and then handed business on which he is bound to lose money. Or they hold a feast and warble: "Now, here we are, all primed to help the contractor get some business. We'll put some ads in the paper announcing outlets at a cut price of 50 per cent and then all you contractors have to do is to ring all the door bells in your neighborhood and cash in." Then when the campaign fails, they blame it all on the contractor. Is it any wonder he goes turtle and won't come out of his shell?

The moral is: "Once bitten, twice shy," and I hope the next time our group is listening to a chronic promiser, they will rise as one and yell: "PILIKIA!!!" for all the World to hear.



Mr. Baker demonstrating and explaining the idea with the use of his demonstrator.

sells burglar alarms to stores

ELECTRICAL contractors in search of ideas to sell can take example from A. Marino and R. J. Baker of the Marino Electric Co. of Duluth, Minn., who have gone about in a practical way to demonstrate and sell a workable inexpensive burglar alarm system especially adaptable for use among small merchants. Their demonstrator is a small door and window arrangement that is wired. It is equipped with a full sized door lock and a dry cell connected buzzer that operates upon the opening of the door or window when the alarm is set.

The demonstration of the idea of the system creates a great deal of interest on the prospect's part. The first man called on with the demonstrator was the Chief of Police of Duluth. He closely examined the idea behind the burglar alarm system, and being convinced that it offered a practical way of announcing, by the ringing of a bell or the noise of a siren, that somebody was attempting to break into a place of business, he gave a letter of recommendation to the Marino Electric Co.

Newspaper reports of places burglarized and the amount of loss in many cases not covered by insurance obviously point to the need of such protection to the average merchant. The first prospect Mr. Baker solicited was a grocer who felt that the idea was good but not necessary for his place because the amount of groceries that could be stolen would not amount to much in dollars and cents. It was a strange coincidence that the next night his place was broken into and the loss was much bigger than the man had figured on. That experience made him a real prospect. The next prospect turned out to be a ladies' apparel shop that was broken into for a loss of about \$2,000. This place was ready for an extra good installation and Mr. Baker saw to it that it got one, so much so that in showing how to lock and unlock the system it accidentally went off with the siren going full blast bringing the police and fire department squads on the run. This was a real demonstration of the effectiveness of the alarm, much to the satisfaction of the storekeeper, but a little uncomfortable for Mr. Baker who had the job of explaining the false alarm to the police and fire department heads.

While it may not be possible to sell every merchant on an installation, it will be found that if the better

successful



E. H. BARBER,
CHIEF OF POLICE

THE CITY OF DULUTH

POLICE DEPARTMENT

DULUTH, MINNESOTA

February First
1932

TO WHOM IT MAY CONCERN:

This will serve to introduce Mr. R. J. Baker and Mr. A. Marino of 408 Builders Exchange Bldg., who are putting out a burglar alarm for residences, stores, warehouses and other buildings.

We have examined this burglar alarm carefully and heartily endorse same to anyone who may have any use for it.

Mr. Baker and Mr. Marino are well known to me, are trustworthy and are to be depended upon to properly install this alarm.

Yours respectfully,

E. H. Barber
E. H. Barber,
Chief of Police.

MB/s

Letter of Recommendation from Chief of Police

class of merchants are contacted on a proposition of this kind a certain percentage of installations will be sold and at the same time there is an opportunity to ascertain other electrical needs the place may have which many mean business to the contractor.

The lowest price installation ran about \$45 and the highest about \$90.

sells gas heater control

The Ross Electric Co., of Superior, Wis., has been doing a fine business on the sale and installation of electric push button control to be used in connection with gas water heating tanks. On all new installations they talk putting in outlets in the bathroom and the kitchen to take care of the device and in that way start the owner's or builder's interest to a point where they can do the selling job on the value of having the outfit put in with the electrical installation.

Electrical Contracting, September, 1932

selling plans that other contractors are using

sells ideas to cash customers

Because they pay cash, R. W. Dome, New Albany, Ind., is paying special attention to filling stations, farmers and florists by bringing ideas to them.

He finds that about 90 per cent of the filling stations that have air lifts have failed to provide proper lighting equipment for working on cars at night. He, therefore, is selling them portable floodlight units which have an angle adjustment for directing the beam where needed. He also sells fans to these stations to be used for customers. Where a customer does not want to get out of the car, as is the case with most women, the fan, mounted on a small tripod, is brought up to the car window.

To the farmers, Mr. Dome has sold a number of fans to keep the cows comfortable when being milked, lights to keep the hens laying and electric pumping to provide plenty of fresh water.

His sales to florists have been lead covered wire for starter beds.

Electrical Contracting, September, 1932

To encourage his wiremen to sell additional wiring and to help him make a profit Ralph King of the King Electric Company, Atlantic, Iowa, has developed what he terms the King Profit Finder.

king's profit finder

In effect it is a sheet which every wireman fills out each day showing in detail all of his operations, the amount of material and labor used, the cost, the charge and the net profit.

Each man is furnished with a complete schedule of costs and charges so that he can make his reports and also that he can give the customer a price right on the spot.

When the plan was put into effect each man was given a list of printed instructions showing exactly how to fill out the record.

The plan has several general advantages for the contractor who does small repair and maintenance work.

1. It enables him to see which men are the most profitable to employ.

2. The employee thinks of his work from a profit standpoint and is stimulated to sell more adequate wiring in order to show a better personal profit record.

3. The system makes for a better understanding between employee and employer. In one instance the employer showed a wireman his own reports and explained why it was necessary to lay him off. The workman, seeing that he was being carried at a loss left, but returned a few days later having solicited and found enough work to justify the contractor in re-employing him.

4. Collections are improved. Every work

leaf book with costs and selling price on all materials for use in making out his profit record. He also uses this book on the job for billing customers. After completing each small repair job the workman makes out a bill for service and explains that 25 cents is deducted for cash. Formerly it was necessary to enter 90 per cent of this work on the books. Now 75 per cent of these jobs are paid for on completion.

Form E. D. 1-1931.

"THE KING PROFIT FINDER"

This Time and Material Report is intended to show the gross profit personally earned for my employee today.

INSTRUCTIONS TO WORKMAN: Make a charge for your time daily, but do not use white sheet for records of materials that have to be carried over from day to day, as white sheet must be ready to post at close of day's business. Use a colored sheet, recording customer's name, date, and having goods taken out or returned. These materials sheets can be placed in the ledger and balanced off upon completion of job. Check sheet time to give workman for material profit. Workman should keep record of other sheets and material profit is given, and last original to bookkeeper immediately for filing.

Directed by the KING ELECTRIC CO., Atlantic, Iowa.

CUSTOMER	DATE	MATERIALS USED	LABOR	CHARGE	COST	NET	PERCENT	
							PERCENT	PERCENT
James Reed	9/1	100 ft. 1/2" wire	1 hr.	1.00	.25	.75	75	75
Harry Jones	9/1	100 ft. 1/2" wire	1 hr.	1.00	.25	.75	75	75
Shop work	9/1	100 ft. 1/2" wire	1 hr.	1.00	.25	.75	75	75

Total Deductions \$.75 Net Earnings for Day \$.75 Total Credits \$ 1.50

BOOKKEEPER NOTE: Credit above workman to ledger as above.

By: *James R. King* Date: *Sept. 1, 1932*

By: *Ralph J. Jones* Date: *Sept. 1, 1932*

Wireman's Daily Profit Record

solicits repairs with home service truck

The Sterling Electric Co., Omaha, Neb., has recently put into operation a home service truck to aid in house to house solicitation for repair work, fixture sales, remodelling and the sale of lamps and tubes.

Many families have repair work that should be done but has not because of the trouble in calling for an electrician or taking the appliance to his shop. In some cases a call discloses repair work that can be done at small cost which the owner did not think worth repairing. Louis G. Vlcek, of the Sterling Company, explains that before the truck visits a neighborhood post cards are sent to residents explaining that their representative will call and present them with a free radio log book. In addition he will test their radio without charge.

SAVE THIS CARD

Good for one 1932 RCA Radio Log Book

The Home Service Car

OFFERS YOU A COMPLETE ELECTRICAL SERVICE

{ MAZDA LAMPS - - RADIO TUBES
REPAIRING - - ELECTRIC WIRING
ELECTRIC FIXTURES - APPLIANCES }

RADIO TUBES TESTED FREE

STERLING ELECTRIC CO.

2429 Farnam Street

OMAHA, NEBR.

Phone AT-1031

After the radio inspection, and sale of replacement or spare tubes, the representative speaks of extra lamps for the house and of the appliances in the house and their condition. Tools and parts for any ordinary repair job are kept in the truck. There is no particular system used in soliciting, other than that the representative must gain the confidence of the housewife. This done he is free to go through the house suggesting additional outlets where they are needed, better fixtures, remodelling, extension wiring, etc. He is capable of making estimates on any ordinary jobs. Jobs involving considerable labor are done by the regular crew which allows the representative to make more calls.

builds broadcasts network

Ray Rooney, proprietor of The South Pasadena (Cal.) Electric Company, has been able to accommodate a large number of neighboring business firms and advertise his own business quite extensively by installing a network for broadcasting and re-broadcasting purposes. Drug stores, cafes, filling stations, and other firms in the city are hooked up on this network.

The idea came to Mr. Rooney a few years ago when interference from trolley cars and high tension lines destroyed radio reception in the leading drug store of the community. The cost of shielding the equipment was greater than the drug firm wished to assume. Mr.

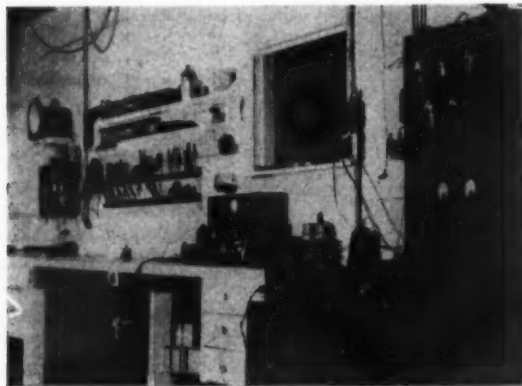
Rooney's shop and store located one block from the tracks and with all the equipment properly installed and properly shielded did not get any interference. He proposed running a wire to the drug store and installing a speaker. This was done and the remote control plan gave the drug store reception that the customers there could enjoy.

The electric shop bore the entire cost of installation and charged a regular monthly rate for the service. The wire could be run with the approval of the State Railway Commission and the approval of the city council even though it cross public property en route and passed between two high voltage wires.

Presently nine other firms asked for the service and three wires, one north, one east and one west, were run from the contractor's place of business. The speakers at filling stations were installed outside so that pedestrians could hear. When competitors asked for the service Mr. Rooney made sure in advance that the competition was friendly and that both would be satisfied.

Mr. Rooney in each case planned for the monthly charge to re-imburse him for his outlay in about six months time. After that it was possible to realize a regular monthly profit.

The service is maintained twenty-four hours each day. Mr. Rooney is always careful to announce when he is re-broadcasting a program from a regular radio station



Broadcast Network Equipment—
South Pasadena Electric's Shop.

and when he is broadcasting records from his own supply.

Direct advertising is done for the "customers" on request and a charge is made for advertising for outsiders. This outside patronage has given a nice outside income, but advertising is not overdone lest it become tiring. Mr. Rooney estimates that he has an audience of several hundreds during the noon hour and it is then that he advertises his own business with a few direct words, but he considers that the network itself is a perpetual advertisement of his business.

The service department has been greatly benefited by the network plan. Several jobs have come in as a direct result of the network. For instance a man wishing to have a wiring job done on an automobile so that he could cook hot dogs by electricity learned of Mr. Rooney by hearing the broadcast, while another contact made in

this way started Mr. Rooney in the business of wiring automatic vending machines for burglar alarm connections. Other contacts have led to the installation of public address systems and the firm has put a truck into the bally-hoo business through contacts made through the network.

The network and twenty-four hour broadcast has given the South Pasadena Electric Company prestige in the territory, and it is now the firm the South Pasadena is apt to think of first when thinking of electrical firms.

The cost of this system is not excessive after the first wire is strung for later installations are merely extensions. Mr. Rooney regards the plan as the finest and most economical form of advertising. He sees no reason why it would not work in any town where there is any kind of radio interference.

r u n s c o n t e s t

The Reynolds Electrical & Engineering Company, El Paso, Texas, has just concluded a prize contest among its prospects in conjunction with a door-to-door canvass that is producing results. Each salesman is a "Mazda Lamp Man" and for a card he has a 2¾ by 4 in. four-page leaflet which gives his name, lamp price-list, schedule of additional wiring charges, radio tube charges and a few paragraphs on the importance of good lighting. These men sell lamps and appliances and are instructed to make, free-of-charge, any minor electrical repairs that the housewife might request as an additional service.

Seven men are employed in this house-to-house canvass, six salesmen and a supervisor, and while they have been at work the mail has taken to the prospects a small 4-page folder announcing a prize contest with \$20.00 first prize and three other merchandise prizes.

The prizes were to be given for the best answers to four questions:

1. What is the Mazda Lamp Man's name in your territory?
2. What service can he render you free-of-charge?
3. Why is it important to get the right lamp in the right place?
4. What short phrase should be his first greeting when he calls at your door?

Each salesman has a district which he works from 8 A.M. to 4 P.M. Their base pay is \$1.50 daily added to which is a 15 percent commission on lamp and small

Electrical Contracting, September, 1932

\$20.00 IN GOLD FREE

for the best answer to

"Who is the Mazda Lamp Man in your territory and what is his purpose?"

2nd PRIZE Sampson-Waffle Iron
3rd PRIZE Sampson Panelmatic Iron
Ten 4th PRIZES . . of . . Six Assorted Mazda Lamps

RULES

Write a letter not to exceed 150 words to the Reynolds Electrical & Engineering Co., Inc., 708 North Piedras Street, answering the above question, including:

1. The Mazda Lamp Man's Name (in your territory)
2. What service can he render you free of charge?
3. Why is it important to get the right lamp in the right place?
4. What short phrase should be his first greeting when he calls at your door?

Please accompany your reply with a Mazda Lamp wrapper bearing the name of the Reynolds Electrical & Engineering Company. Contest ends July 26th. Judges shall be the officers of the Reynolds Electrical & Engineering Company. Prize winners will be announced August 1, 1932.

REYNOLDS ELECTRICAL & ENGINEERING CO., Inc.
Always Something Better

Announcement of Contest

appliance sales. The supervisor receives a base salary and an over-ride on all appliance sales. He also handles commercial sales where the discounts are too small to permit a regular sales commission.

The net results for the campaign through the middle of August were as follows:

Period	Lamps	Appliances
May 15-30	\$170.00	\$ 48.60
June	340.00	132.79
July	623.02	146.23
August 1-15	703.24	260.00
	<u>\$1837.02</u>	<u>\$587.62</u>

In addition two extra wiremen have been employed to handle small appliance repairs and install convenience outlets. These two men, since the plan was put in operation, have worked steadily, averaging 6 hours daily.

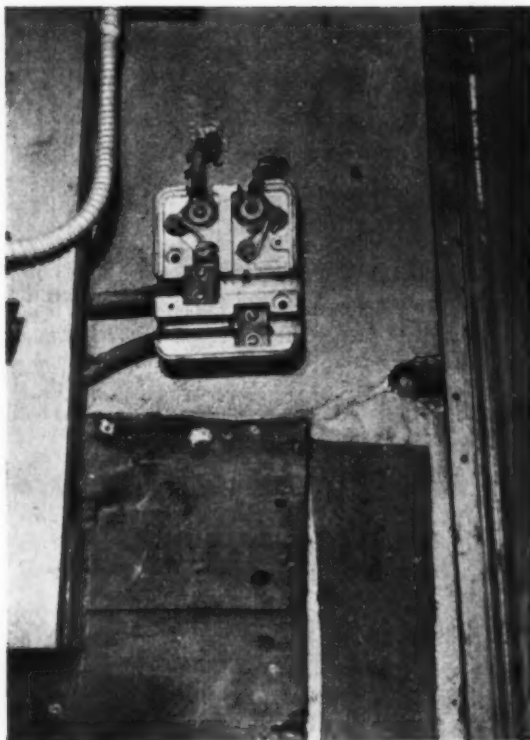
office building modernization sales opportunity

Modernization of office and other public buildings built 15 years or more ago offers a wiring opportunity.

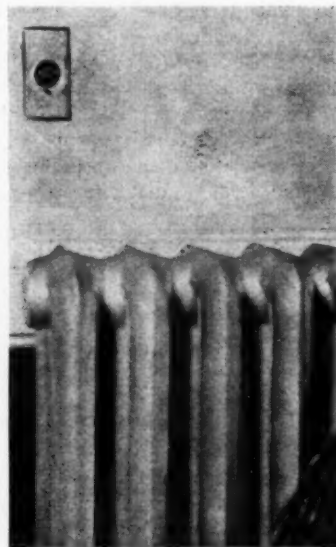
The most noticeable points of such wiring systems are the meter boards, fixtures and wall outlets such as switches and convenience outlets. If the cutouts and meter connections are strung over a messy board in open fashion, why not try to sell the owner the idea of placing them in metal cabinets with conduit connections. Also the fixtures are probably of low efficiency and modern units

of some approved type could easily be substituted. In many old public buildings, the light switches are of the old rotary cup type. Remove them, install the proper switch box and modern toggle switch, which can be easily done in most instances. In fact there are countless ways such an old wiring system could be greatly improved with a little sales effort on the part of the contractor. A few suggestions are shown in the accompanying pictures which were taken in various public buildings of old construction.

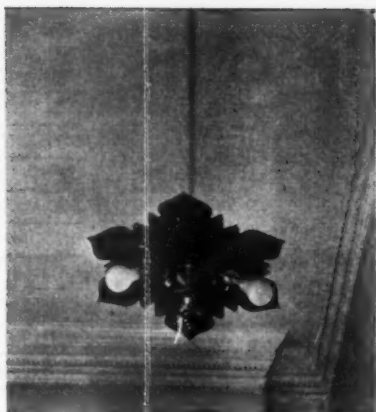
BY
HAROLD
P. STRAND



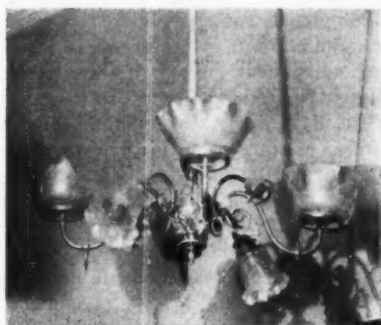
Here is shown a link fuse cutout with fuse wire, cover missing, exposing live contacts to the touch which is carrying 75 amp. supplying a group of meters in an office building about 50 years old. Note how a board was built over the open submains with no protection over the wires. There is plenty of argument in this case for changes including safety.



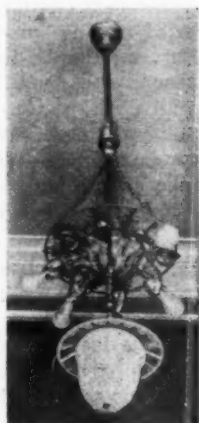
In a 3-story building consisting of stores, offices and a banquet hall, was found as pictured the use of rotary snap switches in every room. As a rule, no box was originally installed with these old switches except in some cases at a somewhat later date.



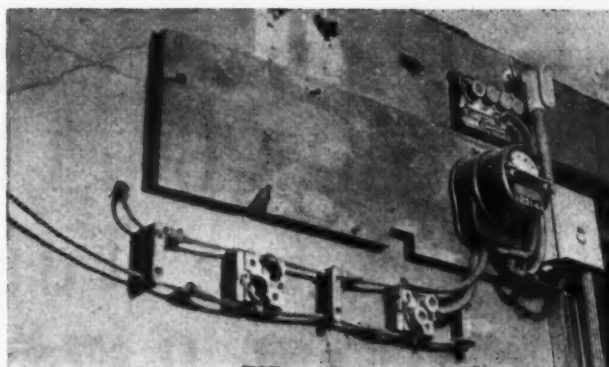
One of the strangest fixtures seen by the writer was photographed in use in the waiting room of an office building of two stories. It has been in use about 40 years. The fanlike part above the bulbs consists of sections cut from copper and made to imitate petals of a flower. Evidently the janitor in years gone by had to climb up and polish the copper as in its present state of dull corroded surface it reflects a very poor light. Two of the key sockets have their outside brass shells missing, exposing live contacts.



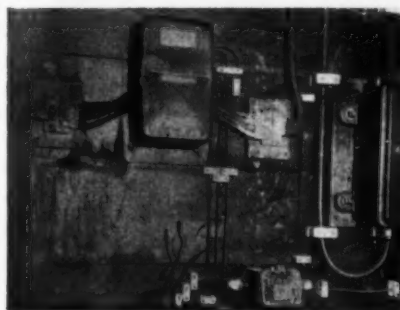
Two more miserable examples of ancient lighting fitments. The one above is a combination "four and four," probably installed about 25 years ago, replacing some older fixture. One of the electric shades is missing and one gas globe is broken, representing a very poor appearance indeed. The fixture on the left would give anyone eyestrain to sit before the seven open bulbs for any length of time. This one is in the center of the assembly hall in an old office building. At some recent date the enclosed globe with its mirror sectioned reflector has been added, but the whole thing presents a lighting fixture of poor efficiency and unsatisfactory illumination not to mention its appearance.



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In an office building housing about 25 tenants this picture of a meter board is typical of each tenant's distribution center. Modernization could well begin here with an enclosed meter cabinet and placing the cutouts in a metal fuse cabinet, with a conduit nipple between. Note the recent addition of one circuit in modern wiring materials. Also note old style branch cutouts in the foreground. These came in just after the link fuses about 30 years or so ago.



An interesting view of a meter board taken in a 10-story hotel building showing old style methods. The meter terminal blocks are all open to the touch and are evidently necessary because the heavy mains could not be carried directly through the meter. At some time there was a fire as shown just to the left of the meter. It could not be learned if it was caused by electrical means or not. Enclosed connections should be made here for safety among other reasons.



Due to leakage of water above, this wall of a hotel was constantly in a very wet condition. Note old wooden fuse cabinet, and the many wires running from it in very hazardous fashion. Note moulding line to the left of hanging on its wires. With wet conditions could anything be much worse? This building has, however, been partly rewired, since this picture was taken, on order of the inspection department of the local fire department.

reinspection in 60 buildings results in 227 jobs valued at \$17,347.50

PORTLAND, ORE.
ELECTRICAL
DIVISION
HANDLES
THE WORK
DIPLOMATICALLY
RATHER THAN
ARBITRARILY,
WITH LITTLE
FRICTION. . .

RE-INSPECTION is now being carried on in Portland, Ore., on a basis that is working as rapidly as possible toward the letter of the ordinance, which reads: "All buildings within the fire limits of the city of Portland shall be systematically re-inspected at least every two years."

Since the first of this year, one deputy inspector has been assigned to re-inspection only, in the inner fire district, comprising the principal commercial buildings, hotels and some apartments—in brief, the congested, high-value district. He is making virtually a building to building inspection, in addition to certain "spot inspections" originating from the fire marshal's reports or especially hazardous conditions coming to his attention. Even then, when on these spot inspections, he goes ahead in each case and clears up the whole building when he is in it.

Outside the inner fire district, a less intensive, though none the less systematic, re-inspection is being carried on by the regular district deputy inspectors in conjunction with their other work. From the accumulated fire marshal report cards in their districts, they are each assigned five each week on which they are required to make re-inspection and report.



L. W. Going, chief electrical inspector, Electrical Division, Bureau of Buildings, Department of Public Works, Portland, Ore. (back of the desk), and J. F. Gray, deputy electrical inspector assigned to re-inspection work, inner fire district.

It is in connection with the work of the re-inspection deputy, J. F. Gray, that certain points of especial interest present themselves. To begin with, the accompanying table of completed work involving rewiring, resulting from six months of intensive effort, in itself stands out as an accomplishment. Each of these 60 buildings represents anywhere from two hours to a week of field work alone (his days being divided into some 5 hours in the field and 3 hours writing up notes and preparing notices, besides answering phone calls and making Code interpretations). It will be seen that a large number of contractors profited to some extent through this work. The total of over \$17,000 does not represent all of it. Many jobs that have been inspected are still in process of completion. Furthermore, a large proportion of the re-inspections involved the taking out of cords, temporary wiring, appliances, instructions against over-fusing, etc., which did not result immediately in new wiring but where the seed of knowledge regarding good and adequate wiring was planted in the owner's mind and where it is known for a certainty that considerable installations for better lighting and service were originated in many cases.

It must not be assumed from this that re-inspection here is carried on under any pretense of making work for the electrical contractor during depressed times. In the first place it is done not for this purpose, but to eliminate fire and life hazards. Secondly, if the inference were drawn by the owner that the department was seeking to help the contractor, in these days, when it is every man for himself, it would make almost impossible any amicable working between the department and the building owner public.

Nevertheless, readers of this magazine can appreciate that re-inspection does cause a large amount of work to be developed that otherwise would not come about. And the department is also cognizant of the fact and in sympathy with the licensed and capable contractor. While it is not possible for the inspector to recommend any contractor specifically, he is constantly urging the

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employment of competent, licensed men, and in various ways, where he can ethically, he is working for the best interests of electrical contractors generally. For instance, in his building to building inspections, he does not start on one street and follow it through to the end of his district, but works out from at least two centers separated a considerable distance apart, alternating the work between these centers day by day. This is for the reason that contracting concerns in a certain district would be apt to have an "edge," so to speak on the rewiring work in their particular part of town. The theory is that by working out from different centers more contractors will be brought in on the work by owners calling for estimates during a given period.

No one likes to have an inspector come into his place and begin looking for ways to cause him to spend money. While the electrical division is backed by police powers and could go in and re-inspect and arbitrarily command work to be done (the quickest and easiest method), this is exactly what Chief Inspector L. W. Goring does not wish to have done. And in Mr. Gray he has a man who is conscientious and diplomatic enough to carry on and make these owners and property managers respect him, and approve the expenditure of some money to improve their premises and make them safe. Almost invariably he gets the result without having to exercise the authority of the law. But getting the result is not so easy in this way as it looks, and, as has been previously stated, it generally means actually "selling" the owner on the advantages, the economy and the protection which he will derive through having the old, offensive conditions cleaned up. And are they offensive? In some of the old basements and catacombs reeking with water and brine, the wiring is often found to be in a state that would almost be unbelievable.

Gray goes at the work in a very methodical way. He goes first to the owner of a building and asks permission to inspect the electrical wiring—does not demand it. Further, he tries to suit his time to theirs and go in when they will not be inconvenienced. At first, some of them try to object on one ground or another. He then points out that he has just completed inspection next door, or in that block and would like to clean up while

Results of six months' work of one man on reinspection in Portland, Ore.

HEIGHT OF BLDG.	COM-PLAINTS	NUMBER PERMITS	VALUATION OF JOBS	PERMIT FEES	NUMBER CONTRACTORS
5 story	27	6	\$ 615.00	\$ 6.40	4
6 "	16	9	85.00	5.50	2
5 "	9	6	1,135.00	14.45	5
5 "	3	4	85.00	3.00	3
4 "	10	8	800.00	6.00	5
2 "	7	4	137.00	4.00	3
1 " Theater	2	1	200.00	5.00	1
2 "	1	1	125.00	1.00	1
3 "	4	4	35.00	2.50	4
4 "	2	3	84.00	2.00	3
3 "	8	8	130.00	4.20	6
2 "	6	1	30.00	.50	1
3 "	8	4	30.00	2.00	1
4 "	1	1	100.00	1.00	1
4 "	5	3	205.00	2.00	3
10 "	1	21	1,827.00	22.10	1
8 "	7	2	95.00	1.50	2
5 "	8	4	200.00	2.10	2
14 "	1	2	1,300.00	11.00	2
1 "	1	1	30.00	.50	1
7 "	16	6	143.00	4.20	3
3 "	7	6	124.00	3.00	5
12 "	5	5	107.50	3.00	2
8 "	2	4	950.00	4.80	2
4 "	11	10	299.50	7.50	3
6 "	14	6	220.00	4.50	4
6 "	1	5	85.00	2.50	1
3 "	3	3	79.00	2.50	3
3 "	5	3	123.00	2.10	2
2 "	4	3	75.00	1.50	1
4 "	3	1	150.00	1.00	1
2 "	10	6	595.00	5.00	3
3 "	2	2	875.00	2.00	1
3 "	1	2	210.00	2.00	2
2 "	1	1	180.00	1.00	1
2 "	1	5	470.00	10.40	2
10 "	1	5	255.00	3.40	Maint.
3 "	1	4	188.00	3.11	2
6 "	1	1	150.00	2.50	Maint.
2 "	2	3	470.00	3.00	3
3 "	2	6	870.00	9.05	3
8 "	1	3	105.00	2.50	1
1 "	1	1	10.00	.50	1
6 "	1	6	350.50	7.50	3
1 "	1	1	12.00	.50	Maint.
4 "	6	5	100.00	3.00	5
1 "	1	1	200.00	1.00	1
5 "	3	5	650.00	7.85	1
3 "	1	2	40.00	1.50	1
4 "	9	4	210.00	3.50	3
3 "	1	1	40.00	.50	1
2 "	3	4	48.00	2.50	3
3 "	5	2	55.00	1.50	2
1 "	1	1	30.00	1.35	1
3 "	1	2	125.00	2.20	1
2 "	3	1	40.00	.50	1
7 "	1	1	1,300.00	2.00	1
3 "	2	2	40.00	1.00	1
5 "	4	3	100.00	1.00	2
2 "	13	2	25.00	1.50	1
	277	227	\$17,347.50	\$216.71	124

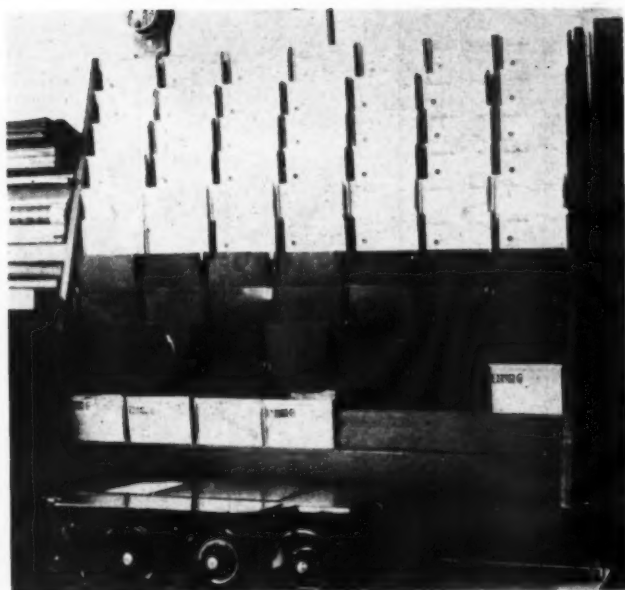
NOTE.—On a large proportion of this man's re-inspection, hazardous conditions were found which were remedied by the removal of offending cords and makeshift wiring, proper fusing, etc., and no new wiring was required at the time.

he is there. This generally satisfies them and they get the idea that this is in reality a general inspection and that everybody is getting it, so they might as well take it then. This is another reason for making the work a door to door proposition instead of spot inspections all over the district.

On some occasions the owner—or more often it is a property manager—still puts up objections. Then, instead of threatening him, Gray goes back to funda-

(Continued on page 48)

a s y s t e m t o p r e v e n t o v e r l o o k i n g J o b s



The Endres Electric Co., Madison, Wisconsin, is using a simple and effective system of job tickets whereby no job can be overlooked and both the office and the mechanics have every uncompleted job in sight until it is finished.

A job order is entered on the machine which is always on the same table as the ticket-rack shown. These tickets are numbered and are made out in duplicate. The original is placed in this office rack (above), while the duplicate becomes the shop-ticket and is sent down stairs.



The shop-ticket is placed in the basement rack for the benefit of the workmen. In the horizontal rack on the left are the larger jobs which run for longer periods of time, while the rush and smaller jobs are filed in the vertical rack at the right. There are two mail boxes on the right, the upper for time and material tickets, and the lower for completed job tickets, with time and material slips attached. These completed tickets are collected at the end of the day and taken upstairs, where the original is then taken out of the rack and the completed record placed in the ledger. The blackboard is used for conveying special instructions to the men.

concealed rewiring on tile walls with tubing

BY CHARLES L. SHRINER
LINCOLN, NEB.



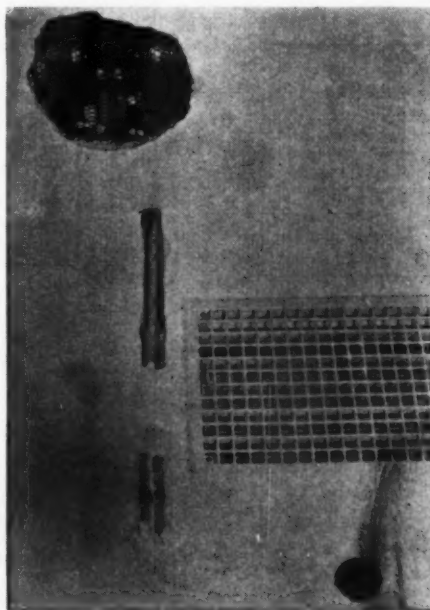
Showing tubing in the suspended ceiling and hazards which would have been encountered in fishing. Runs were bent by hand without the use of a hickey. About 10 in. clearance to crawl in.

We recently installed a concealed nurses' call and radio system on two floors of one wing of the Veteran's Hospital at Lincoln, Neb., using steel tubing under the plaster. The wing was constructed of concrete, brick and tile with a suspended ceiling of from 8 to 14 inches.

Since the building was fully occupied, care had to be taken to keep the work as clean and confined as possible. Only one journeyman and helper were used.

After cutting the first hole in the ceiling and surveying the job, it was found that the wireman could barely crawl between the ceiling and the floor above. The walls were channeled, and outlet boxes set exactly in place, with a minimum of cutting into the tile walls. The steel tubing was bent, locked into place, then strapped and held firmly by molding plaster. The outside diameter of the tubing allowed for plenty of clearance without cutting the tile all away. Holes were cut for pull boxes in the ceiling of the hall over the doors to each room and saddle stubs were run into the rooms under the beams by cutting a hole through a limited space, and another run made to the outlet over the door. Then by crawling on the suspended ceiling, the connecting runs were all bent by hand without the use of a hickey and not in any way flattening the tubing. This was securely coupled and tied, and a good solid job was the result.

The two floors of sixteen rooms were roughed-in, in fifteen days, including the halls which were about 100 ft. long.



A view showing the pull box in the ceiling and corridor outlet over door, set exactly in place and held by molding plaster. A white enameled blank telephone plate was used in place of a round cover on ceiling outlet, hence the switch ring.



A view in one of the wards showing how work was installed.

FEEDER OR SERVICE

MOTOR BRANCH CIRCUIT

MOTOR BRANCH CIRCUIT

1

2

3

4

FEEDER PROTECTION

Size of fuses are affected by the size of the largest motor supplied for:—

If the H.P. of the largest motor represents not over 40% of the total connected load, the fuses must be capable of carrying the full load current of all motors.

If the H.P. of the largest motor is over 40% of the total connected load, the fuses must be able to carry the starting current of the large motor plus the full load current of all remaining motors.

UNFUSED TAP WIRES

Must be either:—

(A) Same size as feeder.

(B) Not over 5' long and in conduit or gutter and not smaller than the load wires being supplied.

(C) At least $\frac{1}{3}$ the capacity of feeder and not over 25' long between tap on feeder and fuses of the load supplied.

BRANCH CIRCUIT PROTECTION

Must be large enough to carry the starting current of the motor. This will be 3 times the full load current if the motor has no compensator. If motor has compensator or is of special type, refer to page 131, column 1, of table 6, of the code.

Protective devices other than fuses shall have a continuous capacity of at least 115%.

FEEDER WIRE

Size of feeder is affected by the size of largest motor supplied:—

If the H.P. of the largest represents not over 40% of the total connected load, the wire must be large enough to carry the full load of all motors.

If the H.P. of the largest motor is over 40% of the total connected load, the wire must be able to carry $1\frac{1}{4}$ times the full load of this large motor, plus the full load current of the remaining motors.

Branch circuit protection may be dispensed with if either:—

(A) Wires of same size as feeder are run in motor circuit.

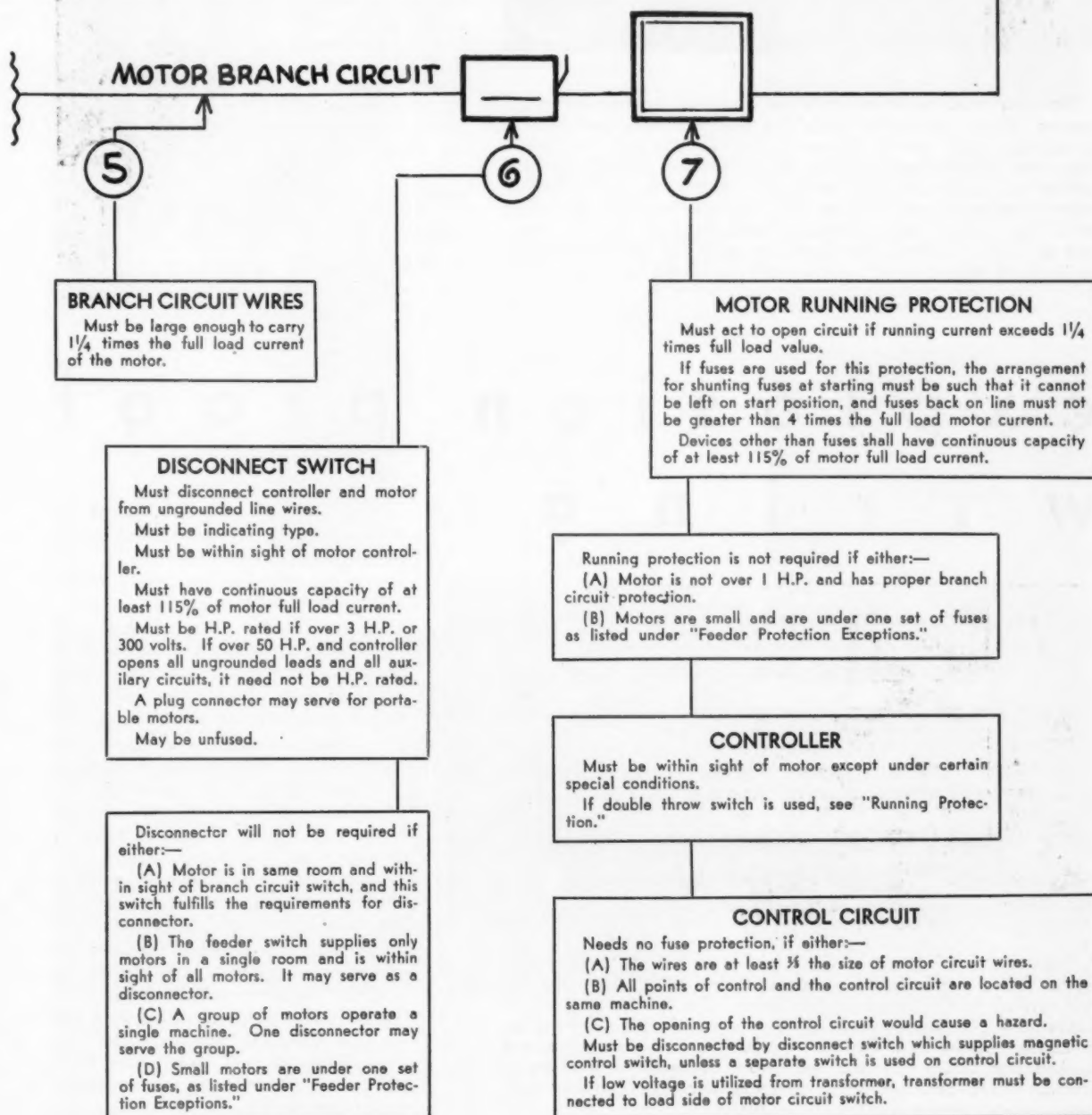
(B) If the length of wire from tap on feeder to motor running protection is not over 25'; the motor circuit wire have at least $\frac{1}{3}$ the capacity of the feeder; the motor is equipped with running protection and the size of the feeder fuses are not greater than 5 times the full load current of the motor.

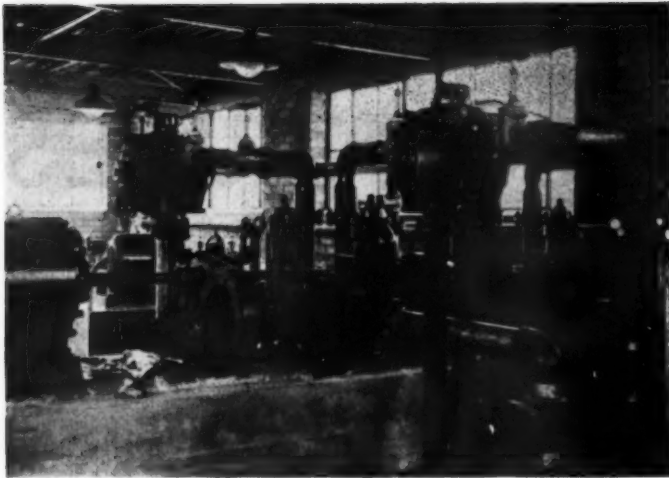
(C) The motors are small and under one set of fuses, as listed under "Feeder Protection Exceptions."

ELECTRICAL CODE MOTOR CIRCUIT RULES

PREPARED BY EDWARD M. McLAUGHLIN, ELECTRICAL INSPECTOR, CITY OF RICHMOND, CALIF.

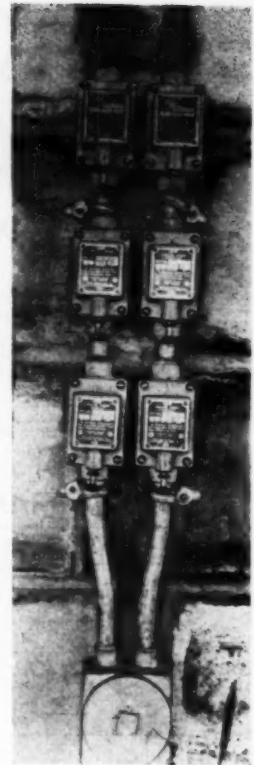
This outline has been blue-printed and distributed to Richmond contractors and others concerned in the installation and inspection of motor wiring and is intended to provide a means for quick assimilation of those motor circuit requirements most frequently encountered. In the distribution of these prints to local contractors, that part covering rule 808-a-1 has been stricken out as it has been found unpractical in Richmond.



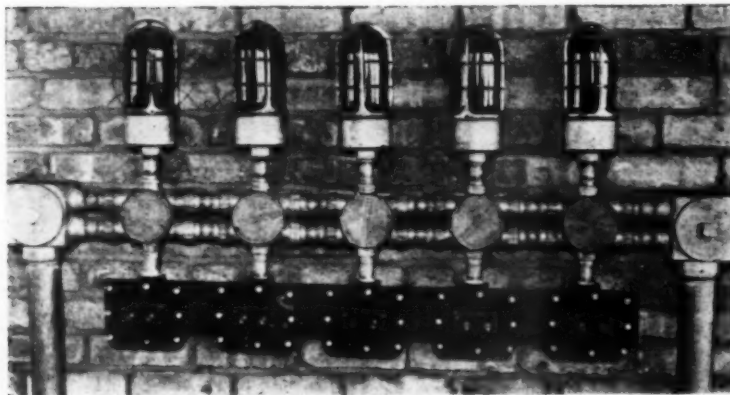


Structure housing pumps which are operated by explosion proof motors. This is the danger spot. The electrical equipment consists of explosion proof motors, six vapor proof lighting units, two explosion proof surface mounted plug receptacles, and pilot light control station with explosion proof switches. The motors are hooked up with 3-conductor lead covered wires with an insulated grounding wire. The conduit carrying these wires is brought close to motor and explosion proof terminal boxes are used for direct connection to body of motor.

Surface mounted explosion proof switches for operating lights in warehouse. The junction box at bottom is connected to 1 1/4 in. service pipe, is sealed with compound and feeds wires for six lighting circuits controlled by explosion proof switches. Malleable one hole straps were used at hubs for fastening switch boxes against brick wall to eliminate drilling of boxes. Directly above the switch boxes are two compound filling boxes which were used in all cases where conduit came down from ceiling to a switch or receptacle.



explosion proof wiring



Control station in pump house, consisting of five vapor proof pilot lights, five explosion proof magnetic control push button stations and seven explosion proof junction boxes. The two square junction boxes have 2-in. hubs welded to them to permit direct connection of conduit to the box. The 2-in. conduit shown on each side was packed with oakum from the top before connection was made to junction boxes, after which the entire header was filled with high temperature compound forced in manually.

Views of the measures taken by Crescent Engineering Co., Chicago to install an explosion proof job of wiring in the new Phillips bulk gasoline station at Niles Center, Ill. In addition to explosion proof fittings and lighting equipment, every effort was made to prevent any electrical cause for explosion. On all threaded screw connections litharge was used to seal them. Oakum was packed into conduit openings in all cases. It stopped the compound from spreading out thinly through junction boxes and the pipes. All testing of lighting circuits, switches and receptacles, power controls and motors was done before sealing connections, outlet boxes and junction boxes with compound. Because of the precautions that are necessary together with adequate testing and the requirements of proper sealing it is estimated that labor on a job of this kind will run about 15 percent higher than it would have been if it were an ordinary non-explosion proof installation.

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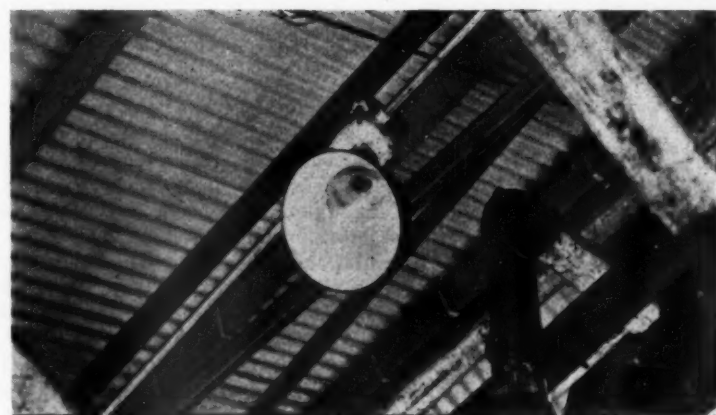


Flush and surface mounting of explosion proof receptacles. These are of the type that do not permit withdrawal or plug in of plug while current is on. A switch mounted in the receptacle provides for disconnect and setting of current. In each case compound filler boxes were used.



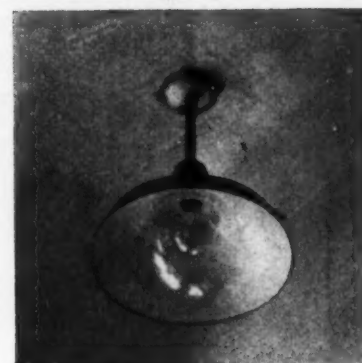
Flush mounting of explosion proof switch. The wires up to the switch came up from a feed below and did not go up above the switch and in this case no compound filler box was necessary.

Ceiling mounted explosion proof outlet box with four conduits branching and a lighting stem attached to the cover. All covers for ceiling mounted outlet boxes were drilled for $\frac{3}{8}$ in. hole and tapped for $\frac{3}{8}$ in. plug. After the box was set in place and the cover was attached the plug was taken out and compound was forced inside with the use of a hand pressure gun. Oakum was packed into the openings of the conduits branching out from the box.

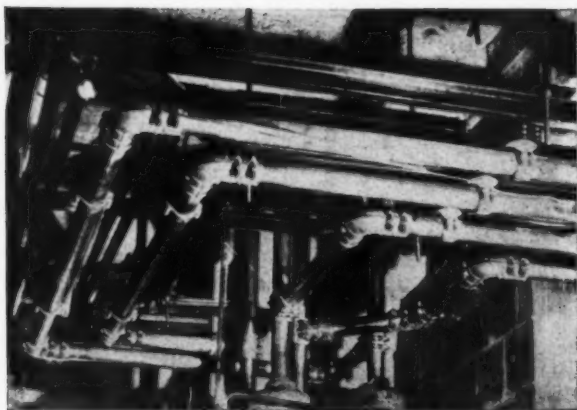


Installation of light on loading platform. Full explosion and vapor proof outdoor installation of light on loading platform. The outlet box which came with mounting lugs attached is bolted to a steel plate which has been welded to angle iron frame.

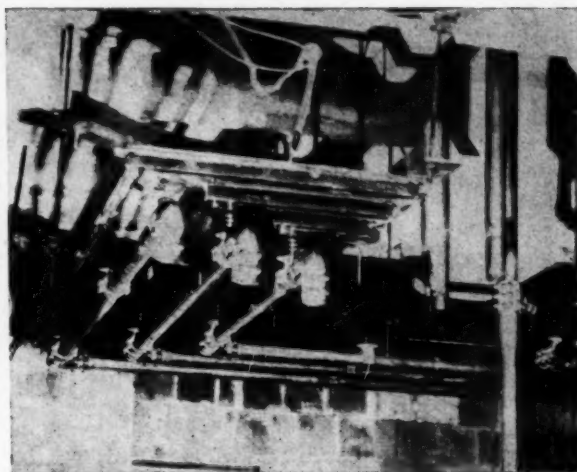
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Lighting fixture mounted on office ceiling show flush mounting of explosion proof box. A 200-watt light bulb is enclosed in a vapor proof glass bowl.



Crossover tie at 19th floor showing connections to tubular risers. The other end of the crossover tie is connected to 2,400-amp. circuit breaker on the switchboard. This shows the type of elbows used and the method of suspension in an angle iron frame.



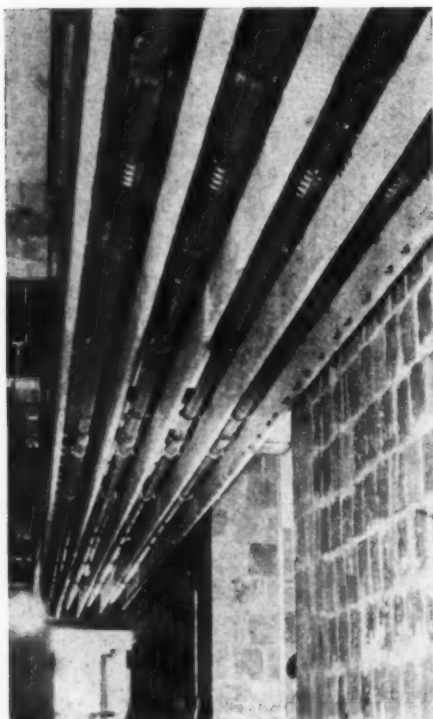
The other end of the crossover tie showing buses ready for switchboard connection.

tubular bus network distribution in 60 wall tower

by

A. E. COMEAU, E. E.
FISCHBACH & MOORE, INC.

A decidedly advanced electrical design is employed in the construction of the latest of the sky-scraping sky-scrapers which was wired by Fischbach & Moore, Inc., New York.



The crossover tie showing special compression couplings and soapstone partitions in place.

TUBULAR bus secondary distribution is one of the major features of the new 60 Wall Tower.

Power is distributed to the basement, 18th floor, 31st floor and the 61st floor through a 13,800 volt system similar to those installed recently in other tall buildings, except that power comes from two distinct power houses to eliminate possibility of failure. The high tension cables to the 61st floor, however, are the longest ever pulled in a building, having a straight run of 850 ft., and each cable being supported only on the 60th floor. The steel armor wires are threaded and clamped through regular supporting collars.

The secondary sides of the transformers are Y connected with a neutral tap, forming a 3-phase 4-wire system with 208 volts between legs and 120 volts to neutral.

The secondary system forms a network, the risers between transformer banks being interconnected. In this way one or more banks may in extreme emergency carry the load of the entire building.

The secondary risers consist of 3-in. (iron pipe size) copper tubes. One set of risers runs from basement switchboard to the 61st floor

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switchboard, running through switchboards on the 18th and 31st floors. The other sets are tied together by a bus cross over. These riser sets are also tied together in basement.

Each set of risers consists of four copper tubes located at the corners of an isosceles triangle, the neutral being located in the center of the triangle.

The secondary tubular risers were installed in sections. For instance, the tubes for the section between the sub-basement and the 19th floor were hoisted to the 20th floor and uprighted in the shaft-way. In handling the tubes a boom was used and the tubes were snagged at two points to prevent bending.

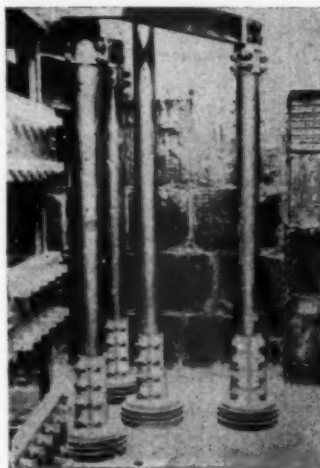
Forms for the concrete slabs over the shaftway were built and the location of the risers laid out on the top form. Sheet metal sleeves were then nailed to the forms to allow for the riser bushings.

The riser locations were accurately projected to the form below with a plumb bob. This process was repeated until all of the floors were lined up.

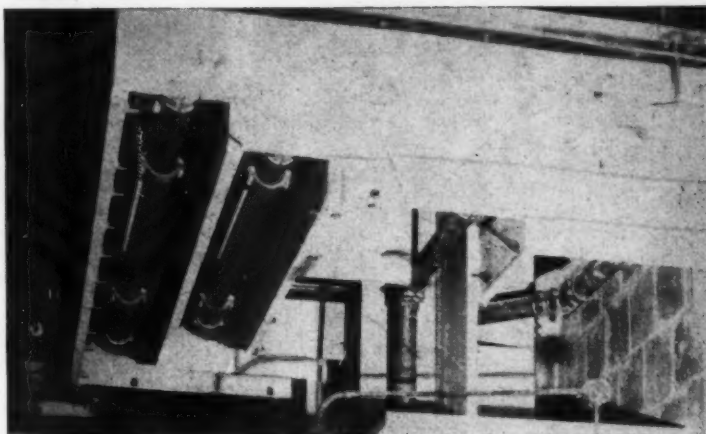
After the concrete slabs were poured the riser tubes were lowered through the holes left by the sleeves and bushings installed as lowering took place. At the top and bottom floors of each section the bushings are provided with compression clamps to support the riser tubes. Midway on each section of tubes expansion joints are installed.

The risers are then barriered by means of 1½-in. soapstone barriers and openings to the compartments covered with ½-in. removable asbestos covers.

Light panels are located adjacent to the riser shafts, the feeders being connected to the risers by special clamps. Due to the short run no feeder fuses are necessary. Where long runs to motors, etc., are tapped on the risers they are protected by fused safety switches.



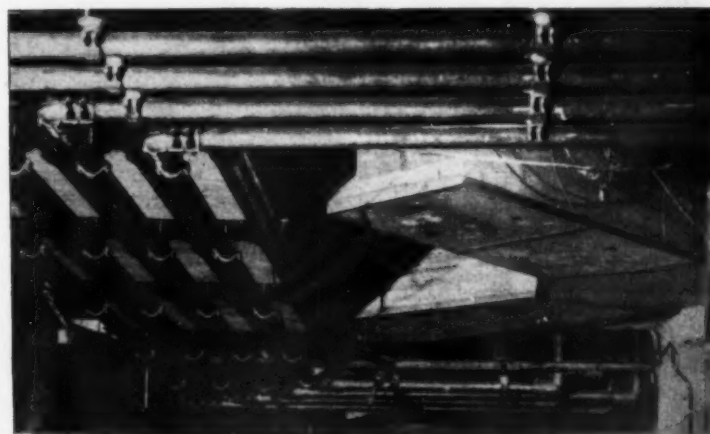
Showing connection of tubular bus to 61st floor switchboard. The clamps on the insulators support the copper down to the expansion joint at the 46th floor.



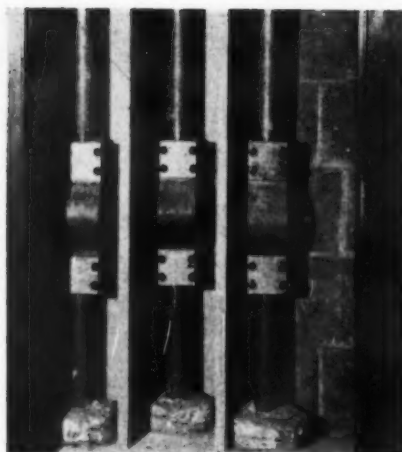
Connection of crossover tie to tubular risers after barriers have been installed.



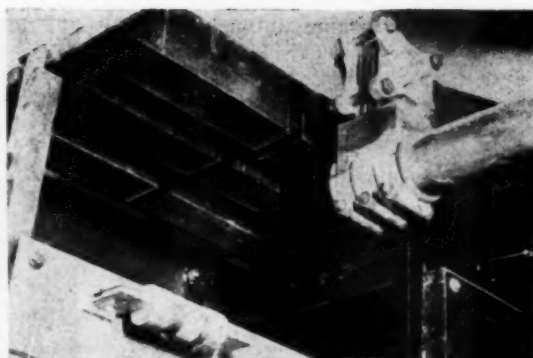
Winch used to lower tubular risers. In lowering, the connection to the rope was made with a special cap screw. The clamps shown were used in shifting tubes.



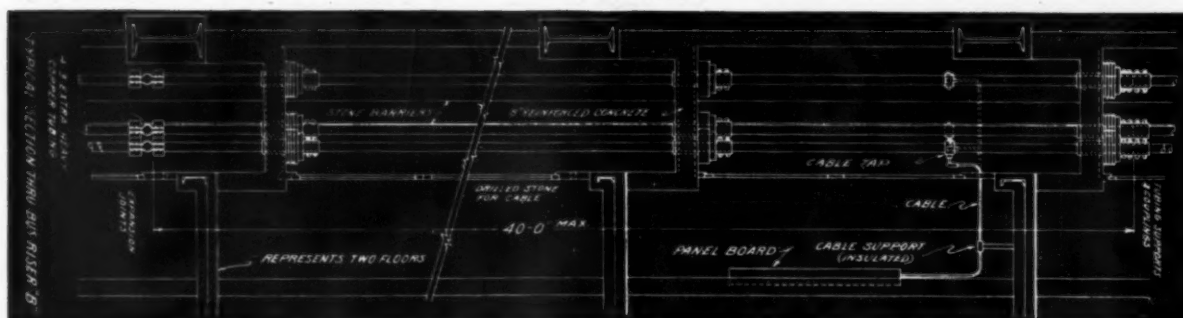
Showing copper from basement switchboard entering shaft that extends to 61st floor. In the center is shown the special high tension pull boxes employed to eliminate the sharp bending of the cable.



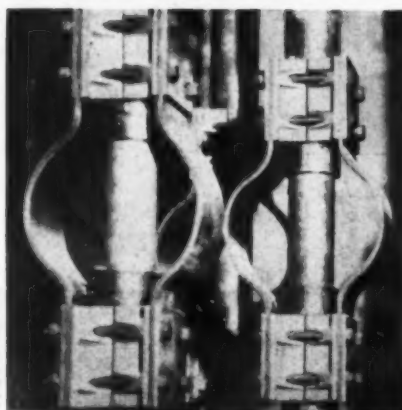
Showing expansion joints after barriers have been erected. At the top are the special clamps used to connect leads to the lighting circuit panel.



The type of special fitting employed to connect tubular bus to flat bus. In the background is shown the method of enclosing the flat buses in micarta sleeves.



Elevation of tubular bus riser construction showing use of concrete slabs at each floor. Note simplicity of tapping buses for panel feeders.



Expansion joints, which are installed midway between switchboards, consist of clamps interconnected with flat laminated copper. The center section of tubing is a copper aligning sleeve.



Line diagram of local service disconnecting arrangement and interconnection of tubular bus system.

An 8-inch concrete slab supports bushings, through which tubes pass, at each floor. Bushings are 14" deep, extending through concrete 10 1/2 inches.

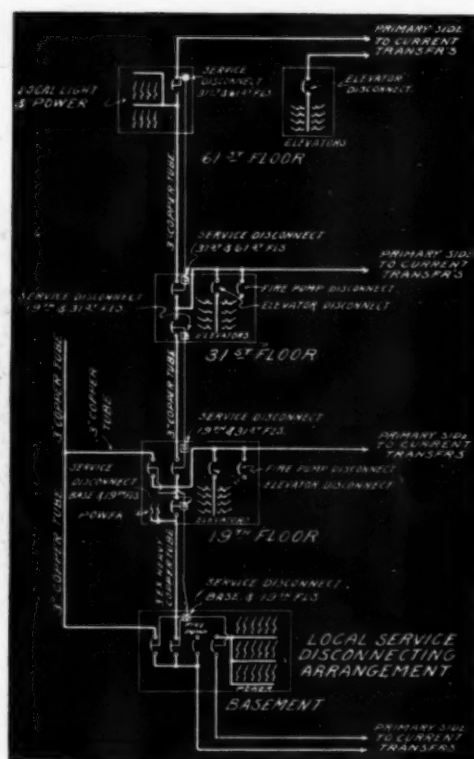
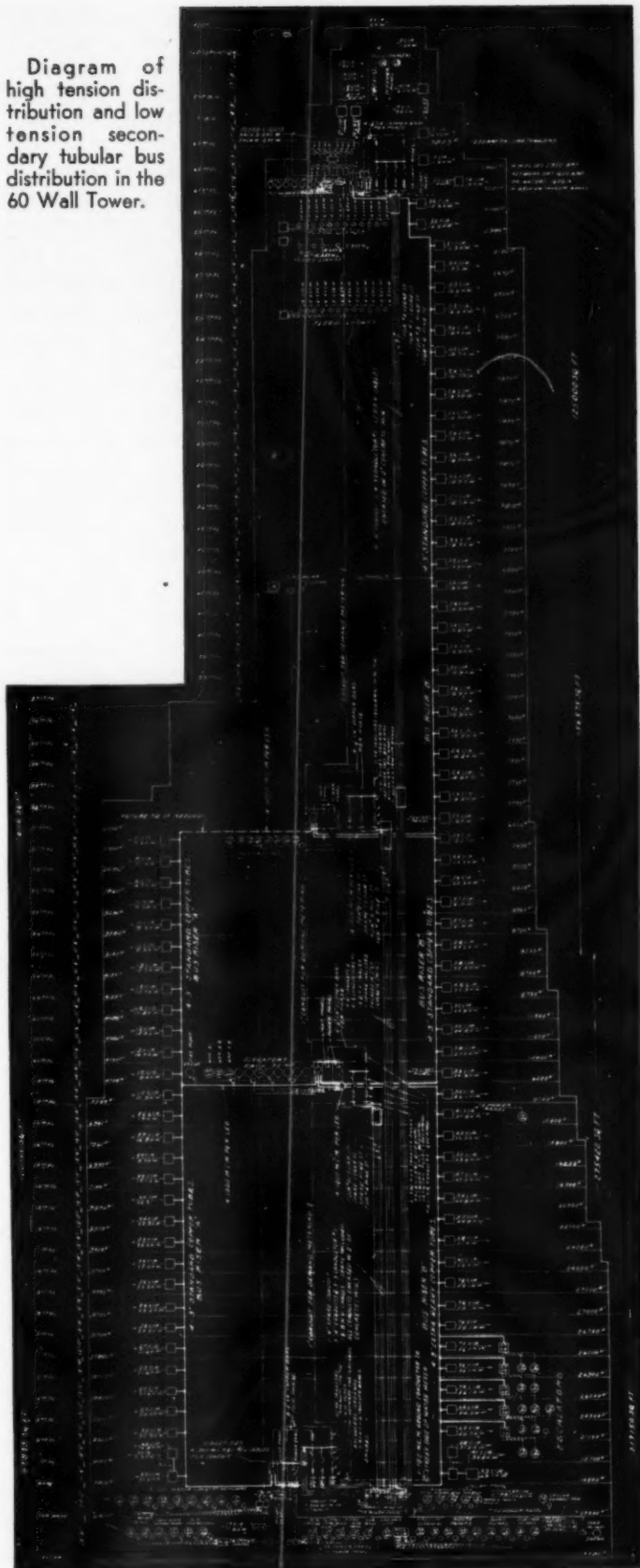
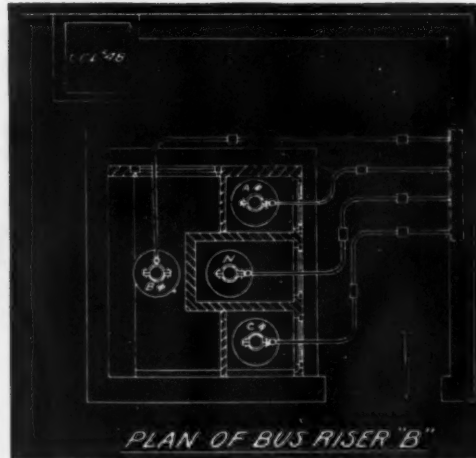


Diagram of high tension distribution and low tension secondary tubular bus distribution in the 60 Wall Tower.



Electrical Contracting, September, 1932



Cross section of tubular bus riser construction showing the delta formation of the tubes and the use of barriers.

ELECTRICAL FEATURES IN 60 WALL TOWER

Lighting outlets on an average of 8 ft. centers and 200 watt capacity permitting use of ultra violet ray lamps if desired.

Lighting panels for tenants are of metering type with maximum flexibility.

All circuit wire is No. 12 B & S gauge complete double under-floor duct system with outlets on 24-in. centers.

Fire protection through fire line signal system, fire line telephone system and fire alarm system.

Recording watchman's system with station on each floor.

Self synchronous motion transmitting devices on water tank system.

Double deck elevators speed up rush hour service.

Escalators are installed to serve the first six floors.

MAJOR MATERIALS USED

590,000 ft. of conduit
1,250,000 ft. of wire
6,000 ft. of 3-in. copper tube
105,000 ft. of underfloor duct
24,730 light outlets
80 Motors totaling 3,820 hp.

electrical contracting

With which is incorporated The Electragist

S. B. WILLIAMS, Editor

A MEMBER'S CONVENTION

THE annual Electragist convention will be held next month in Kansas City, Mo., Oct. 10, 11 and 12.

It will be unlike recent conventions because with the exception of one session, it will be entirely a convention for and by members. Previous conventions have had a certain glamour due to the presence of one or two leaders from the other branches of the industry; but the members have, nevertheless, been critical of the program committee for not allowing more time for the discussion of their own intimate problems.

This year the convention will be centered on the problems of members as stated by themselves. These problems have been grouped and will be presented to the meeting in that fashion. Ample time will be allotted for discussion.

It is highly desirable, therefore, that every section and chapter be represented. It will not be possible for the association to carry out the wishes of the membership unless the members are represented at Kansas City and opinions voiced.

What with reduced hotel and railroad rates the expenses of attending this convention should not be great. Every chapter should be able to afford the expense of at least one delegate to Kansas City.

MAINTENANCE MEN LICENSES

A NUMBER of cities have recently set up ordinance rules for the regulation of electrical work in industrial plants. In some cases the electricians themselves are licensed while in others it is the factory owner.

Who is encouraging these ordinances? Who is it that wants the factory electrician to be licensed?

When these men secure a license they become a menace to the contractor as bootleg competition. The public does not know that a license to do electrical work in a certain factory is not good enough to cover electrical work in people's homes.

If to provide a lever to enforce inspection a license is necessary—something that can be worked as a penalty—then why not license the factory itself? In this way the contractor is protected and the inspection department is assured of the reporting of electrical work. As it now stands with many of these ordinances, the contractors are not protected, the maintenance men pay a tax for the privilege of working and the inspection department has to rely on the individual to report any work done.

With periodic reinspection and owner licensing all of the desired safety is secured without treading on any one's toes.

BID PEDDLING

CONGRESS adjourned without taking action on Bill H.R. 9921, to require general contractors bidding on government work to name with their proposals the subcontractors whose bids they used in making up their proposals, and if awarded the contract to give the work to such subcontractors. The bill had been favorably reported out of committee but was pushed aside in the mass of work in the closing days of Congress, and will have to be reintroduced at the next session.

Meanwhile, the government bureaus have again declared themselves as unconcerned with the evils of bid-peddling or the abuses from which responsible contractors suffer from this practice. Recently a flagrant example of abuse of bidding by a general contractor on a veterans' hospital job was reported to the veterans' administration at Washington. Under dates of July 22-23 identical replies were received from the Administrator of Veterans' Administration and from the assistant director of construction, as follows:

Under the contract the contractor will be fully responsible to the government for the materials furnished and for the work performed. The contract provides that the contracting officer may require the contractor to dismiss from the work any employees found to be incompetent or otherwise objectionable. Except as stated, the contracting officer has no jurisdiction over the selection of the personnel engaged by the contractor. It appears that no action by the Veterans' Administration is desirable or permissible at this time.

The unethical general contractors who peddle bids are leeches on the ethical gen-

eral and subcontractors alike. These leeches could not exist if they did not receive bids from responsible concerns. The time has come when every electrical contractor should refuse to quote a bid to any general contractor who will not submit with his request for bids a guarantee substantially as follows:

"We guarantee the subcontractor that all figures will be handled confidentially. We will use the low responsible figure in making up our bid and if the contract is awarded to us we will place the order with the firm whose figure we used, without asking for any second proposition from any subcontractor after we get the job."

Unless the general contractor will give such guarantee, the electrical contractor should refuse positively to quote him on any request for bids.

HARMONY WITHIN THE INDUSTRY

THERE is a decided breach today in our electrical industry trade relations. It is not unhealable provided those who would bring about harmony are willing to honestly study the cause for the rupture and then honestly attempt to remove the disturbing elements.

Because the Electragists have brought their fight against the utilities out into the open they are looked upon as aggressors and are meeting with scant sympathy from the majority of the electrical industry.

It has been said that the Electragists are making a grave mistake in attacking such a powerful group as the utilities. It is not bravado on the part of the Electragists. They feel very much like the wild animal which will run from a foe just as long as it can, but on being cornered it will face anything with an attack, be it as large as a mountain.

The Electragists are not without justification nor can they be criticized for not trying amicable ways of settling their differences. In fact, the Electragists have been noted for their willingness to work with others, or to discontinue activities which others thought injurious to the industry.

The Electragists have never given up their desire to work with the other branches of the industry nor will they. They realize that their greatest good lies in the progress that can be made only by a united industry.

On the other hand, they know that no real and lasting progress can be made so long as there is an unhealed sore existing—a sore that is continually being irritated.

When the good doctor comes along who can and does remove the irritation so that the sore may heal then will peace come.

In the past when breaks have seemed imminent, promises have been made and accepted. The Electragists are now convinced that promises, though made in the best of faith and intention, are of little value until they are applied.

On the other hand, the Electragists are not looking for the millenium. They realize, as does everybody else, that a trade association cannot speak for the actions of its individual members. They are fully conscious of the fact that no matter how well differences might be settled by peace-makers, there will be some people who will not be in accord and will refuse to go along.

Whether the Electragists have taken the wrong path can be determined only by the peace that results. There is little likelihood of retaliation by the utilities because their leaders have found that their best course has always been conciliation.

It is perhaps unfortunate that there is no place today where industry problems can be brought for investigation and settlement. The Society for Electrical Development had that as one of its major duties. It never functioned. Perhaps this breach in industry relations may bring the Society back to life for the sole purpose of acting as a forum on all intra-industry problems.

CREATIVE SELLING

ELECTRICAL contractors who are determined to survive this depression are finding out that selling does not simply mean asking someone to buy something. The important thing today is sales imagination.

There are plenty of people in every community with money to spend for electrical work. The problem is how to separate them from their money.

One solution that a number of contractors are using starts with the selection of a class of prospects. The next step is to locate some of the difficulties this class of prospect has and then to see wherein electricity can eliminate these difficulties. If so, then there is something to sell—and it generally works.

This creative selling has been sadly lacking in this industry for a long time but hard times is bringing it to light. It has possibilities today and far greater possibilities as business generally improves.

\\ code chats //

A MONTHLY DISCUSSION OF WIRING PRACTICE AND QUESTIONS OF INTERPRETATION, PRESENTED WITH A VIEW TOWARD ENCOURAGING A BETTER UNDERSTANDING OF THE NATIONAL ELECTRICAL CODE.

CONDUCTED BY F. N. M. SQUIRES

ASSISTANT CHIEF INSPECTOR, N. Y. BOARD OF FIRE UNDERWRITERS

SEND IN YOUR QUESTIONS

One of the main purposes of this section is to provide contractors and inspectors with unbiased interpretation of Code rules. Wherever any of our readers are doubtful about the meaning of a rule, or wherever there has been a dispute between a contractor and an inspector involving an honest difference of opinion regarding the Code, send your questions to **ELECTRICAL CONTRACTING**. All answers will appear in these columns and also the inquirer will receive a personal reply, as soon as the interpretation is made. Names of questioners will not be divulged.

GROUND CLAMP RATINGS

At times ground clamps may carry considerable current. How many straps or what size clamp should be used on a large ground; or in other words why should ground clamps not have a rating?

The Code is quite specific as to the size of the grounding conductor to be used whether it is a wire or pipe and gives the sizes of these required for corresponding sizes of service wires, service conduit or protective devices. But when we get to the ground clamp there is no data to guide either the contractor or inspector. While with certain types of grounding devices the Laboratories require a sufficient carrying capacity, which is secured by a required number of grounding straps, to be provided for, according to the size of the conduit with which they

are used, before their approval of the devices is granted, there still is insufficient means for the inspector to satisfy himself that proper capacity has been supplied in the clamp itself. As proper and efficient grounding has become extremely important for the safety of our present installations particular attention should be paid to what may be the weakest link in grounding system.

Ratings stamped on the ground clamp itself would be of great benefit. These ratings need not be in ampere capacity, but might be of wire or conduit sizes with which they are to be used, or marked with the corresponding protective device size as, for instance, is given in 907-n.

MOTOR GROUPING

It is desired to place a group of 5 motors consisting of two 1 h.p., two $\frac{1}{2}$ h.p., and one $\frac{3}{4}$ h.p. under the protection of a single set of 15-amp. fuses, the wires supplying the motor being No. 14. The motors are 2-phase, 220-volt, fed from a 5-wire 2-phase system. Does the above comply with the Code?

Table 4 of Section 808 gives us the following full load currents:

1 h.p. = 2.9 Amps.

$\frac{1}{2}$ h.p. = 2.2 "

$\frac{3}{4}$ h.p. = 2.4 "

The total full load current for the five motors is therefore 12.6 amp.

As the largest motor of this group (one of the 1 h.p. ones) is less than 40 per cent of the total horsepower of the group the feeder conductors

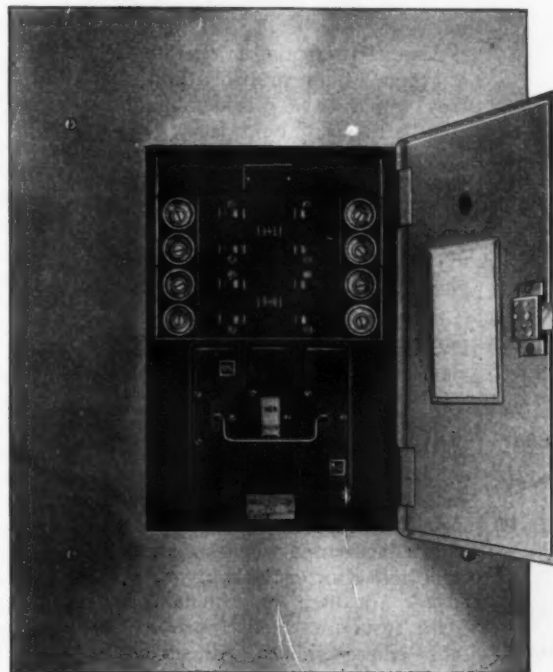


MOTOR SPECIALISTS FOR 17 YEARS: The Economy Electric Co., Youngstown, Ohio dates back to 1915 and has the space and equipment for any service required on motors. Left to right in the picture are: A. P. Dearing; Wm. Cutler; Joseph Cutler, and Edw. Price, who happens to be the first man hired by the company when it started. This firm has 3000 motors of various sizes, new and used, in stock at all times.

CONVERTI-FUSE

IN STANDARD UNIT LIGHTING PANELBOARDS

The
"CIRCLE T"
LINE
TYPE "A" & "RB" INDUSTRIAL
SWITCHES
MOTOR CONTROL
SWITCHES
TYPE "C" SWITCHES
ENTRANCE SWITCHES
METER SERVICE
SWITCHES
SPECIAL SWITCHES
PANELBOARDS
SWITCHBOARDS
and other devices—all listed in
Cat. No. 15 and Supplementary
Bulletins.

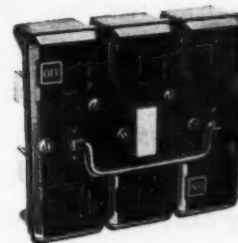


Converti-Fuse Mains for Safety in Modern Lighting

Trumbull Unit Panelboards have for many years been standard equipment to control the branch circuit lighting of industrial plants.

All lighting panelboards listed in Trumbull Catalog 15 are now furnished (in addition to main lug connections) with CONVERTI-FUSE mains. This provides both main switch and fuse protection.

In the interest of good control and safety for a lighting installation, this type of panel is recommended. Made for light and power feeder circuits in standard units from 30 to 600 amperes.



By removing the cap, fuses may be changed at a distance from the panelboard. When the cap is rotated 180 degrees and reinserted, the panelboard is disconnected from the main lighting feeder.

THE TRUMBULL ELECTRIC MANUFACTURING COMPANY
PLAINVILLE CONNECTICUT

A GENERAL ELECTRIC ORGANIZATION

NEW YORK . PHILADELPHIA . CHICAGO

BOSTON . ATLANTA . SAN FRANCISCO



QUALITY WIRE

ANSONIA ANNUNCIATOR AND ANTENNA WIRES

WITH the political campaigns now well under way, and the public aroused to greater interest than for many years, now is the time to tune up radio sets. Often better reception is obtained by stringing new antenna wire. Why not replenish your stock in anticipation of an awakening demand?

Manufactured by

The ANSONIA



Electrical
Company
Ansonia, Conn.

ANNUNCIATORS • BELLS • BUZZERS
PUSH BUTTONS • WIRE

would, according to 808-a (1), have to be large enough only to carry 12.6 amps., and No. 14 wire would, therefore, be sufficient.

Also under rule 808-c, Exception 2, the motors of this group would be considered as sufficiently protected by the 15-amp. fuses. But—this group does not satisfy the next part of Exception 2 of 808-c as the total load of this group is over 1320 volt-amperes. Therefore, the Code does not permit such a group of motors because the total load of the group is too large.

Anyone attempting to operate such a group would probably find that they would have considerable difficulty with the 15-amp. fuses.

It might look that the medium-duty appliance branch circuit, as mentioned also in Exception 2 might be used but as such a circuit is limited to 125 volts it cannot be employed in this case.

PRESSED STEEL BOXES OUTDOORS

Does the Code permit the use of the ordinary 3-in. round box out of doors?

Rule 703-k states that in moist places boxes shall be so placed or equipped that moisture will be prevented from entering or accumulating within the box. Such prevention cannot be secured where an armored cable connector, or locknuts, or plain covers are used on common box. Some inspectors have approved the jobs where rubber gaskets were placed between the box and its cover. Some want also that gaskets be put on when armored cable or conduit is used.



ORLANDO'S OLDEST:—A. P. Curry, left, and E. W. Ensign of Orlando, Fla., hold the record of that city for being in business longer without interruption and under the same name.

These methods, however, fail to make this type of box moisture proof especially when we consider the extra screwholes which are punched in the back of such a box.

The only real satisfactory method is to use the cast type box with threaded fittings.

CROWDING OF OUTLET AND JUNCTION BOXES

Inspectors are being constantly confronted with conditions of overcrowding of outlet and junction boxes, and are up against the fact that Code rules do not adequately legislate against this evil.

In the case of conduit a limit of nine wires is imposed and in no case is more than 40 per cent of the cross-section of conduit to be occupied by wires. In some raceways the space to be occupied by wires is put at 20 per cent. But when we get to the boxes about the only limitation is imposed by the second sentence of 703-a. Here it says that the box must be provided with a cover, and sometimes it is hard to get the cover on even with the prodigious use of a hammer. And the rule goes on to say that if a fixture canopy is present we can omit the box cover.

To overcome this evil of the overcrowding of wires and splices at boxes, one large city has adopted the rule that not more than three 3-wire or four 2-wire cables shall be connected into any one junction or outlet box. This is quite satisfactory as far as it goes as it covers probably 90 per cent of the cases encountered as most of the work on which the abuse would be found is on cable installations. Much abuse would be eliminated in other localities if the above ruling would be followed.

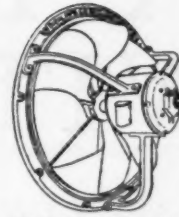
SPLICES NOT SOLDERED

Why is it that with many inspection departments one of the most frequent violations noted is "Splices not soldered"?

Carelessness or thoughtlessness seems to be the answer.

One of the first requirements learned by a new mechanic is that for the soldering and taping of splices. And yet inspectors everywhere encounter their omissions. Sometimes the mechanic "forgets" or is in a hurry. Sometimes he has forgotten his torch or solder. Sometimes he is in too much haste in

Back on the job



18" to 48" High and Low
Speed Exhaust Fans

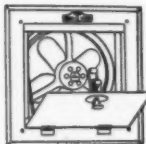
*for fifty more
weeks!*



9", 12", 15" and 16"
Ventilating Fans



New—32" and 52" Elec-
trically Reversible Ceiling
Fans



Wind-O-Vent Wall Cab-
inet Unit with Louvers



Wind-O-Vent Ventilator,
Metal or Glass Panel

The contractor's fan market—

Home kitchens, restau-
rants, billiard halls, the-
atres, laboratories, mills,
factories, shops, stores
and offices.

MOST indoor workers enjoy two of the fifty-two weeks of the year vacationing in the sunlight and open air and then return to spend the remaining fifty weeks in stuffy offices, stores, restaurants, shops, laboratories, factories—and the like.

Executives in these places are becoming more "fresh air minded"—they know air, constantly changed, is conducive of higher employee morale and efficiency.

With the complete DIEHL Fan Line, electrical contractors are prepared to meet practically every ventilation problem of this most active market.

Your electrical wholesaler stocks the complete DIEHL Line—write him, or direct to us, for the Diehl catalog and installation data.

DIEHL MANUFACTURING COMPANY

Electrical Division of

THE SINGER MANUFACTURING COMPANY

Elizabethport, N. J.

Atlanta

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New York

Chicago
Philadelphia

Columbus
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DIEHL *fans*

FOR EVERY VENTILATING NEED

MURRAY SWITCHES

FOR ALTERATIONS—

WHETHER NEW OUTLETS FOR
LIGHT, REFRIGERATOR, OIL BURNER
ELECTRIC WATER HEATER
ELECTRIC RANGE—

THERE'S A MURRAY BRANCH
ATTACHMENT, SWITCH OR
COMBINED OUTFIT FOR THE JOB



NEW CATALOG LISTS
MANY ADDITIONAL
DEVICES—COUPON FOR
CONVENIENCE IN REQUESTING CATALOG

METROPOLITAN DEVICE CORPORATION

1250 ATLANTIC AVENUE
BROOKLYN • NEW YORK

METROPOLITAN DEVICE CORPORATION
1250 ATLANTIC AVENUE
BROOKLYN-NEW YORK

Please Send
Murray Switch Catalog

Name.....
Address.....
.....



ELECTRIC EYE OPENS DOOR: The F. D. Hayes Electric Co., Lansing, Mich., designed and installed in the restaurant of a local hotel a door opener and closer which is automatically operated with the use of the electric eye and the equipment designed and patented by the F. D. Hayes Electric Co. Two pedestals are mounted a few feet from the door, one has the photoelectric cell mounted in it and the other one opposite it holds a beam of light focused upon the cell. As the beam of light is broken by any object moving between the pedestals the electric eye operates a relay which closes a circuit supplying current to the door operating equipment. The door can also be manually operated while the current is on. The speed and time of opening and closing the door can be adjusted to meet different conditions. Mr. Hayes is shown above with one of the pedestals while in the background is part of the equipment and the door that it operates.

cleaning the wires and the solder won't take. And sometimes the contractor thinks he can "get away with it." Sad to say, sometimes he does.

Every once in a while we run into the individual who "wants to be shown" and who says "show me the rule in the Code," for he claims to have looked all through the Code but could not find it.

We like to accommodate so here it is: *Rules 203-b (Page 15). Wires shall be so spliced or joined as to be mechanically and electrically secure without solder. The joints shall be then soldered, unless made with a splicing device, and shall be covered with an insulation equal to that on the wires.*

And now we've got to watch our wire connectors. There are unlisted (unapproved or "bootleg") ones on the market, some of which closely resemble the approved ones. Let's be careful about this also.

CENTRAL CONDUIT

has *always* been
easy to bend . .



So soft and ductile is the steel that you can wrap a section of "Central" Conduit around a pole if necessary without impairment. Electrical contractors have enjoyed this outstanding advantage in "Central" Steel Conduit for over 20 years at least.

Positive protection against rust and corrosion is assured by the permanent black enameling process in "Central Black" Conduit,—the double-thick zinc coating in "Central White" and the triple-protected, acid-resisting, super conduit known everywhere as "Whitenred." "CENTRAL" meets every conduit requirement, everywhere.

CENTRAL TUBE CO.

Pittsburgh

A.E.I.

NEWS AND SERVICE INFORMATION

MATERIAL FOR THIS DEPARTMENT IS SUPPLIED BY THE HEADQUARTERS STAFF OF THE ASSOCIATION OF ELECTRICAL CONTRACTORS, INTERNATIONAL 420 LEXINGTON AVENUE, NEW YORK, N. Y.

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General Manager
Laurence W. Davis
420 Lexington Ave.
New York City

Contractors Organized for Industry Welfare

KANSAS CITY NEXT MONTH

The thirty-second annual Electra-gists' Convention at the Hotel President, Kansas City, Mo., on October 10-11-12, will be a deliberative conference of the electrical contracting industry to formulate guiding policies.

On the first two days of the convention both morning and afternoon sessions will be for contractor-dealers only, where a frank discussion of the problems affecting the contractors' business today will be participated in by delegates from all parts of the country. Each of the special subjects for discussion at these forum sessions will be presented under the leadership of electra-gists selected for their keen appreciation of the important problems involved.

Subjects for Forum Discussion

Nearly fifty specific problems have been submitted to the program committee for discussion in these sessions. These have been carefully analyzed and will be grouped under general headings, so as to permit of effective discussion and definite policy action where justified. The general classification of subjects follows:

1. New Business Development.
 - a. Replacement of strictly competitive business through successful sales efforts.
2. Contracting Competition.
 - a. How can the public be best served through intelligent competition?
 - b. Can prices be stabilized without violation of laws?
3. Methods of Bidding.
 - a. Relations with architects.
 - b. Bid-peddling by general contractors.
4. Merchandising.
 - a. Report of Electrical Merchandising Survey.
 - b. Utilities' merchandising competition.
 - c. Chain stores and mail order house competition.
 - d. Corrective distribution policies.
5. Relations with Wholesalers.
 - a. Credit policies.
 - b. Industrial business.
 - c. Is a new type of jobber needed?
6. Relations with Manufacturers.
 - a. Manufacturers' direct sales to consumers.
 - b. Closer co-operation in promotional sales.
 - c. Adequate margins.
7. Motor Distribution.
 - a. Discussion of motor specialist problems at special session of motor section.
8. Laws and Regulations.
 - a. Local and State contractors' licensing.
 - b. Installation and inspection ordinances.
 - c. Reinspection.
 - d. Sales control ordinances.
9. Industry Standards.
 - a. Tendency to lower Code and manufacturing standards.
 - b. What will become of the National Electrical Code? Can it continue to be the guide for local codes?
10. Selling the Public.
 - a. Adequate wiring.
 - b. Complete electrification.
 - c. New fields for electrical service.

The Wednesday morning session on October 12 will be open to all groups of the industry, at which outstanding speakers will present papers with strong fundamental messages to the industry. Among the subjects to be covered by these papers are the following:

"Business Policies Affecting Distribution."

"Industry Recognition of the Better Sales Units Among Electrical Contractors."

"Our Industry Standards — The Effect Upon Public Confidence from Trading Down Instead of Trading Up."

"Understanding the Independent Dealer's Problems."

"Meeting a New Prosperity with New Methods of Salesmanship."



EXPANDS CONTRACTING BUSINESS: The Electrical Engineering & Repair Co., Atlanta, Ga., have just settled in their own building where they will have three times the floor space they had in their old shop. The firm does both motor repairing and contracting. Shown above, left to right, are R. C. Thompson, Bill Woods, Miss Woodall and E. Thompson.

IF PROSPECTIVE TENANTS SAY
"We'll let you know...later"

TEST FOR THE Twilight Zone*

Typical advertisement of Westinghouse National Advertising Campaign for Better Lighting.

IF PROSPECTIVE tenants continue to turn away with a vague, "we'll let you know later", and you see them no more—test your lighting.

There is nothing that can detract more from the desirability and cheerfulness of an office than inadequate Twilight Zone* lighting. In seven out of every ten buildings, its ill effects are turning away prospective tenants and causing old tenants to be dissatisfied without knowing exactly why.

You can test for the Twilight Zone in a few minutes. Take a phone book. Then, sitting or standing where people must work, open the book at random. Can you read any name, address, and number rapidly and without effort? You should be able to do so readily—for the telephone book is scientifically designed for perfect legibility under proper light. If you can't—if you have to squint and draw the book closer to your face—then Twilight Zone lighting probably is robbing you of profitable tenants.

To make your building attract new tenants, a Westinghouse Lighting Specialist will design for you a correct lighting system—correct lighting that is diffused, soft, adequate and appealing.

**That deceptive half-light between obvious darkness and adequate illumination.*

Westinghouse
Lighting system

TESTS for Twilight Zones* help you sell Lighting

TO help you sell contracts for new lighting installations, Westinghouse is conducting a nation-wide advertising campaign for better lighting in factories, stores, office buildings and apartments. "Test for Twilight Zone," the theme of this campaign, is strikingly presented in an extensive series of advertisements, of which the above is typical.

This campaign has sent building managers and industrial executives into buildings and shops to test their lighting by the mere reading of a phone book.

They usually find Twilight Zones, because 87 per cent of all industrial plants have inadequate lighting, and the lighting in almost every building a few years old is obsolete.

This is the kind of advertising help you have wanted and needed—it causes your prospects to question the adequacy of their present lighting, and paves the way

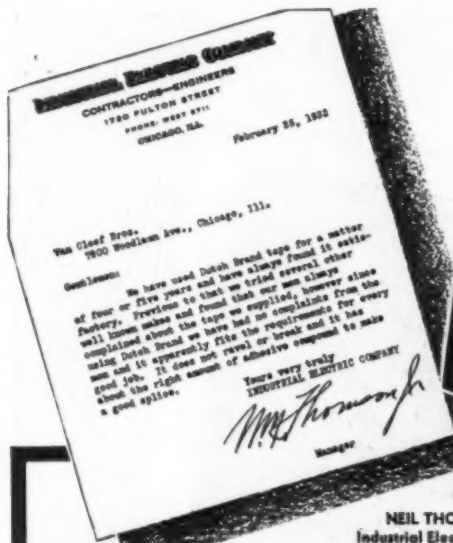
with a simple test for you to sell them correct lighting.

On new lighting jobs install Westinghouse equipment. It produces the most economical lighting possible, because lighting's largest expense is wattage consumption and Westinghouse equipment is designed to generate the highest possible intensity of light per watt consumed by the lamp.

**That deceptive half-light between obvious darkness and adequate illumination.*

T 79326 **Westinghouse**
Quality workmanship guarantees every Westinghouse product





Says

NEIL THOMPSON, Jr., Manager
Industrial Electric Company, Chicago, Ill.

"Since Using DUTCH BRAND We Have Had No Complaints"

HAVE your men ever complained about the tape they use? If they have you can easily satisfy them just as Mr. Thompson did, by buying DUTCH BRAND Friction Tape. Even if they haven't you will please them and save them time by giving them all the benefits of this "Extra Service" product. Here are the reasons for DUTCH BRAND'S "Extra Service" workmanship:

1. Manufactured by our own 4 ply saturation process. Not 2 coats or 3 coats of compound, but 4 plies of rubber uniformly applied that give it exceptional adhesiveness and long life in any climate.
2. The 4 ply process eliminates pin holes and insures extra insulating safety. One thickness of this tape resists 2200 volts.
3. The edges do not fray. Every inch is clean cut and usable right down to the core, no waste.
4. It is made on a base of tough close-woven sheeting that brute strength can't easily break.
5. Its great adhesiveness is always fresh. It tests and is not of the gooey or messy type. It won't dirty the hands.
6. It is neatly packaged in small sizes for the consumer and shop sizes for the contractor.

Mailing the coupon below doesn't mean that you are obliged to buy. All we will do is send you full size free test rolls so you can learn for yourself that DUTCH BRAND does a better job, quicker, neater and cheaper.

DUTCH BRAND Friction Tape, Rubber Tape and Soldering Paste
are sold by electrical jobbers everywhere

VAN CLEEF BROS. Established 1910

Manufacturers DUTCH BRAND Friction and Rubber Tape and Soldering Paste
Woodlawn Ave., 77th to 78th Streets, Chicago, U. S. A.

DUTCH BRAND FRICTION TAPE



DUTCH BRAND
Rubber Insulating
Tape

Fuses instantly without heat. Molds into one solid piece. It's t-r-e-s-t-c-h-e-s without breaking because it contains 20% more live, new rubber.



DUTCH BRAND
Soldering Paste

A scientific mixture.
Cleans as it works.
Holds solder fast.
Less Paste required
per job.



Van Cleef Bros.
Woodlawn Ave., 77th to 78th Sts.
Chicago, Illinois
Gentlemen: We would like to test the "Extra Service" qualities of the following DUTCH BRAND products:
☐ Friction Tape ☐ Rubber Tape ☐ Soldering Paste
Name.....
Kind of Business.....
Street Address.....
City..... State.....
Jobber's Name.....



REFRIGERATION SPECIALIST:—Albert V. Johnson of Orlando, Fla., has an all around contracting and merchandising business but of late he has been giving special attention to commercial refrigeration sales and installations.

The Kansas City Convention of Electragists should draw a large attendance. The special reduced fares on all railroads for this convention, and the low rates for rooms arranged at the Hotel President, makes this convention an important investment to every electrical contractor who is planning his business to meet changed conditions in his industry today.

Reservations for rooms should be made as early as possible by writing direct to Hotel President, Kansas City, Mo. Rooms range in price from \$2.50 to \$3.50 single, and from \$3.50 to \$4.50 double, according to location.

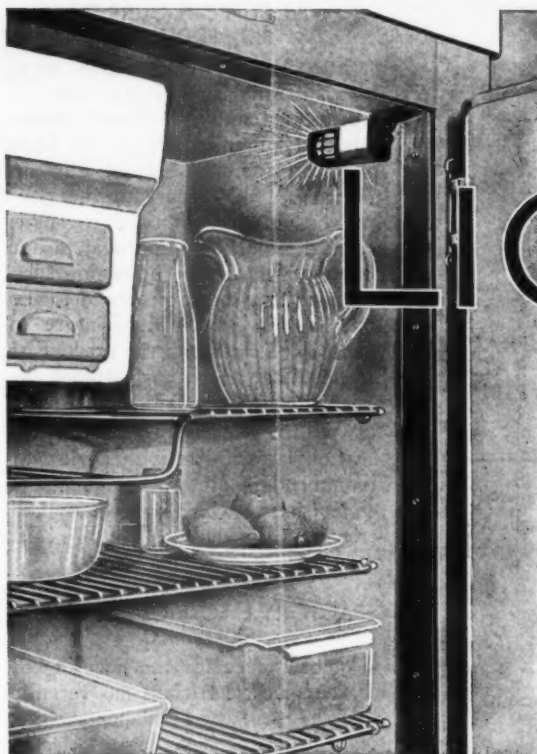
WAGE RATE AND INSPECTION DATA

The A. E. I. has issued as of August, 1932, its annual compilation of wage rates, rates of charges, ordinances affecting electrical work, and names of electrical inspectors in about 400 cities and towns in the United States and Canada.

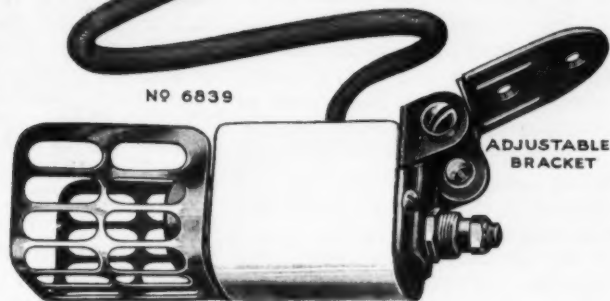
The data on wage rates includes revised wage schedules made effective in many cities this summer, and indicates whether the labor conditions are union shop, open shop, or both.

In the compilation of ordinances the data indicates whether there is a local installation ordinance, and also whether a contractor's license is required for the cities reporting.

All of this data is of important value to electrical contractors figuring on work outside of their own cities.



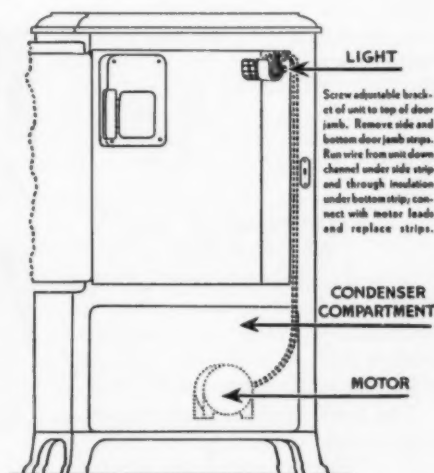
H & H LIGHTING UNIT FOR REFRIGERATORS



Lights up contents of Box
when door is open

30-minute Job to Install

REFRIGERATORS are so often placed in out-of-the-way nooks in pantries, kitchens, back-halls poorly lighted. The contents and compartments of the box are back in the shadows, dimly visible. Illumination is being provided by an INSIDE lighting unit in the newer-model refrigerators. This unit, developed by H & H, has a door switch control which automatically lights up the contents of the box when door is open; shuts off the light when door is closed. All boxes bought before this development—and the new low-priced boxes not so equipped—make a large-size market for this Lighting Unit. . . No. 6839 fits *all* makes of boxes. The adjustable bracket takes care of door jamb strips set at any angle; allows horizontal adjustment of the light. Takes standard type S-11 intermediate-base 10-Watt lamps, which flood-light the innermost corners of the box by diffusion on the white-enameled walls. Here's a worth-while profit-item in itself *plus* a means of getting into homes to secure additional wiring jobs, or make extra sales of merchandise. The central station gets an added load-builder for its lines. Write for data-sheet with full particulars and instructions.



HART & HEGEMAN DIVISION

THE ARROW-HART & HEGEMAN ELECTRIC CO. HARTFORD, CONN.

CONTRACTING news

INFORMATION OF INTEREST TO ELECTRICAL CONTRACTORS
CONSISTING OF ITEMS OF NEWS, SHORT ARTICLES, PRACTICAL
IDEAS, ETC., OUR READERS ARE INVITED TO CONTRIBUTE TO
THIS DEPARTMENT

TO CELEBRATE 50 YEARS OF UTILITY SERVICE

The fiftieth anniversary of the opening of the first central station will be celebrated in New York on two dates, September 4 and 12.

The first station was the old Pearl Street generating station in lower Manhattan, New York, which was placed in commercial operation at 3 P. M. on September 4, 1882. The September 4 program this year, which will come on Sunday, will be a brief ceremony held at 3 o'clock at the site of the old station. The second celebration will be a dinner at the Waldorf Astoria, to which representatives of the electrical industry and its various branches, and of civic, scientific and engineering bodies are being invited.

The electrical industry, which now serves more than 24,000,000 customers, started out 50 years ago with 59 customers served from a generating plant of six dynamos, each of which could light from 1,200 to 1,750 sixteen-candle power incandescent lamps.

SALES CONTROL FOR GRAND RAPIDS

A new section has been added to the Grand Rapids (Mich.) electrical ordinance providing for licensing of dealers and sale of only approved materials, devices and appliances.

The license fee for contractors has been increased from \$25 to \$100. A part of this increased fee is to be used for reinspection work.

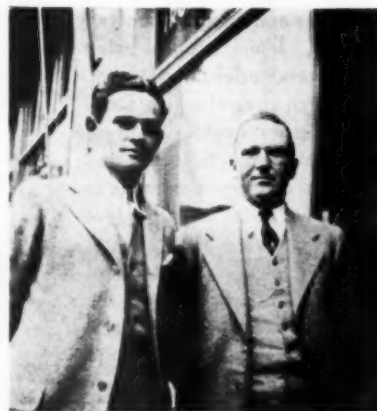
The ordinance now requires that all dealers except contractors, who are otherwise licensed, shall take out the retail dealer's license with an

annual fee of \$1.00. The ordinance further provides for licensing factory electricians with an annual fee of \$10.

PROPOSALS FOR 1933 CODE

A. R. Small, chairman, Electrical Committee, N.F.P.A., announces that it is planned to have reports from most of the Code article committees available for publication soon after December 1, 1932, in preparation for the 1933 National Electrical Code.

Persons or organizations interested in changes in the Code should present their proposals before October 1. These proposals may be filed with the chairman of the Electrical Committee or with the chairman of the article committee concerned.



ONLY DOWNTOWN CONTRACTOR:—The Dixie Electric Company, Montgomery, Ala., is the only firm of contractors left in the downtown section of that city. Formerly there were eight. J. M. Crump, at the left in this photo, has charge of the fixture department while R. M. Supple superintends the wiring.

WILL SUPPORT CURB ON BID PEDDLING

Carlos W. Huntington, director of the California State Department of Professional and Vocational Standards and administrator of the California Contractors' License Law, in his June, 1932, report to the governor said, "In addition, we have received widespread approval to our announced desire of supporting such measures as may be proposed to the 1933 session of the Legislature to enable us to cope with the practice of bid peddling, which has assumed the proportions of a racket.

"We are also making a study of the Contractors' Act with a view of recommending other amendments to the legislature which will clarify and strengthen the act."

FACTORY ELECTRICIANS TO BE EXAMINED

An ordinance for the licensing of maintenance electricians has recently been adopted by Oklahoma City, Okla. This ordinance states electricians shall be registered for the purpose of doing work only upon employer's premises upon the payment of an examination fee of \$2.00 and the passing of an examination with regard to their practical knowledge of wiring and maintenance of electrical equipment. Renewal fees are set at \$1.00. License lapses when a maintenance electrician leaves the employment under which he is registered.

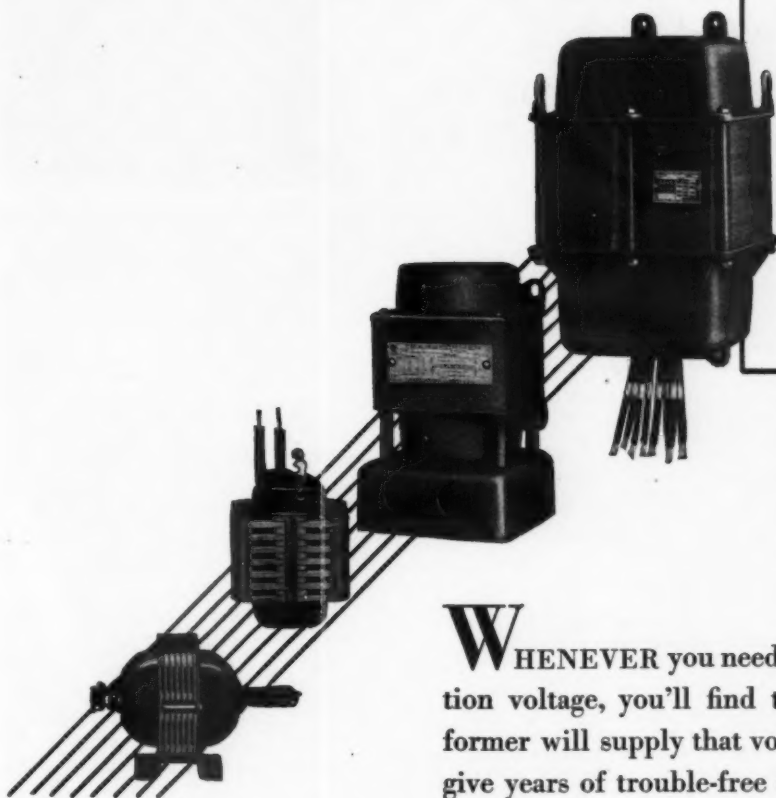
HARMONY WITHIN THE INDUSTRY SOUGHT

At the conclusion of Camp Cooperation held on shipboard en route to Bermuda and return, August 3 to 8, the confreres met in New York at the Waldorf Astoria with the presidents of the four national associations of the electrical industry, for the purpose of inspiring a better feeling of co-operation and harmony within the industry. The main address was delivered by Horace P. Liversidge, president of the Electrical Association of Philadelphia, whose subject was "Interdependence Within the Industry." The meeting was the first step in an effort to settle the differences that have arisen between different branches of the industry.

The League Council elections re-

Does the job require low voltage?

Portable lamps and tools
Bells and buzzers
Annunciators
Signal lamps
Lamps subject to vibration
Airport boundary lights
Motion-picture projectors
Lamps in railway cars and buses during long stops



GENERAL ELECTRIC
*also builds air-cooled
transformers for*

Boosting voltage

Balancing voltage

Insulating circuits

Phase changing

Distribution in plants
and buildings

WHENEVER you need less than the usual distribution voltage, you'll find that a G-E air-cooled transformer will supply that voltage economically, and will give years of trouble-free operation.

Compactness, light weight, simple mounting arrangement, and provision for conduit or open wiring are keynotes of design which adapt these transformers to every installation requirement. No fireproof vault is required; install the transformer in any convenient location, indoors or outside, and depend on it to give a lifetime of service — without inspection or maintenance.

Our nearest office will furnish you further information on the complete line of G-E air-cooled transformers. Or write General Electric Company, Schenectady, N. Y.

405-41

GENERAL ELECTRIC

FREE!

to readers of **ELECTRICAL CONTRACTING**
This New Book

"41 SUCCESSFUL SALES PLANS FOR CONTRACTORS"

WHERE should you go for business in these times? HOW can you sell wiring jobs today? WHO are your best prospects for profitable business now?

You will find the correct, complete answers to each of these vital questions in "41 SUCCESSFUL SALES PLANS FOR CONTRACTORS"—a new, up-to-the-minute volume of selling information just compiled for readers of **ELECTRICAL CONTRACTING** from the past year's issues of the magazine.

"41 SUCCESSFUL SALES PLANS FOR CONTRACTORS" is a collection from every section of the United States of proved business-getting data and ideas. It accurately analyzes your opportunities for selling installations in different fields. It lists your best prospects for jobs. And then it details for you the best, the most effective methods of selling wiring jobs being employed today by contractors anywhere. It tells you WHO to sell, HOW to sell, and WHERE to sell. Just a few of the opportunities and plans it outlines for you are these:

- 52 Opportunities for Wiring in Homes.
- 8 Ventilation Sales Points for Contractors.
- 81 Places to Look for Business in Industrial Plants.
- How an Ohio contractor sold 50 house rewiring jobs.
- How a Los Angeles contractor keeps 20 wiremen busy five days a week.

"41 SUCCESSFUL SALES PLANS FOR CONTRACTORS" is actually a manual of selling which you can refer to whenever you need a new idea or a fresh lead for going after additional wiring work. All of the information is indexed for quick reference. Never has a more timely, practical fund of tested money-making information been made available for contractors under one cover.

"41 SUCCESSFUL SALES PLANS FOR CONTRACTORS" is not for sale. We have prepared this serviceable manual especially to send as a gift to readers in return for their renewal subscriptions.

As a subscriber for **ELECTRICAL CONTRACTING**, you may obtain this book immediately by authorizing us at this time to extend your subscription for one or two years.

Send for your copy today. All you need do is to fill in the coupon below and return it to us with your renewal remittance.

ELECTRICAL CONTRACTING,
520 NO. MICHIGAN AVE., CHICAGO

Please send me a FREE copy of "41 SUCCESSFUL SALES PLANS FOR CONTRACTORS" and at the same time extend my subscription for the period checked below. Remittance for my renewal is attached.

☐ TWO YEARS AT \$8.00

☐ ONE YEAR AT \$2.00

Name.....

Street.....

City and State.....

Business.....



KEEPS OLD CUSTOMERS—GETS NEW ONES: G. W. Malone, Cleveland, Ohio, has been serving industrials in that city since away back when. He has built up a long list of customers who stay with him and often gets a call from some firm he served 10 or 15 years ago. He takes an active interest in all local electrical movements and was elected this year to the Board of Directors of the Electrical Business Association.

sulted in the re-election of J. J. Caddigan of Boston as president. Ralph Neumuller of New York is vice-president and K. A. McIntyre of the Society for Electrical Development, secretary.

The district representatives on the council were elected as follows: District 1, J. J. Caddigan, H. E. Dawson; district 2, George R. Conover, Ralph Neumuller, George Noll; district 3, J. E. North, Charles M. Beltzhoover; district 4, H. A. Brooks; District 5, J. A. Fowler, W. C. Allen; district 6, R. S. Steffens, W. A. Zervas, Ted C. Brown; district 7, John S. Hogan; district 8, G. W. Weston, Carl A. Christine; district 11, R. E. Folland, and district 13, E. M. Ashworth, J. G. Glassco and James Lightbody.

TO CONTINUE ELECTRICAL SCHOOL IN MILWAUKEE

The electrical school, which was started prior to last summer's vacation in Milwaukee, Wis., by the Electrical Workers' Local Union No. 494, for the purpose of educating its members to be efficient with the latest knowledge of electrical apparatus and their proper functions, will be continued this fall.

The union has extended an invitation to all electrical contractors to take part in the program of this school, as well as manufacturers.

Demonstrations of various types



AMERITE 30% RUBBER COVERED WIRES

For An Investment of Millions

In the present building units in the mammoth plant of the Western Electric Company, Point Breeze Works at Baltimore, American Steel & Wire Company Amerite 30% Rubber Covered Wires were used throughout—thus safeguarding a large investment in electrical equipment with the highest type of wiring that engineering science has yet evolved.

The selection of Amerite 30% Wire was based on its excellent quality, constant uniformity and known dependability of its manufacturer. If you have a wiring job in the offing let us work with you on your wire requirements. Detailed information and estimates will be furnished promptly.

1831



1932

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

And All Principal Cities

Pacific Coast Distributors: Columbia Steel Company, Ross Building, San Francisco

Export Distributors: United States Steel Products Company, New York

\$195⁰⁰ PER MONTH EXTRA INCOME

Many a contractor and motor repair house has built up a fine monthly income through building a business in Motor Maintenance among industrial plants and other commercial establishments.

The entire line of Ideal Motor Maintenance Equipment has greatly simplified the job of keeping motors and dynamos in good operating condition. It has made possible your rendering the best results at a low price.

You are assured an extra income if you use modern Ideal Motor Maintenance Equipment.

17,000 USERS
IDEAL
MOTOR MAINTENANCE
EQUIPMENT



Hand Stening—A Large Commutator



Precision Grinder in Operation



Using Ideal Undercutter in a Tight Place Without Removing Brush Rigging

FREE

**CATALOG and REFERENCE
BOOK ON MOTOR
MAINTENANCE**

WRITE TO

**IDEAL COMMUTATOR
DRESSER COMPANY**

1041 Park Avenue, SYCAMORE, ILLINOIS

of equipment are given at these classes, as well as the wiring circuits, and after each demonstration, all in attendance are permitted to ask questions pertaining to the circuit or equipment. In addition, there are classes for all apprentices who must attend school at least one evening each week before they are able to qualify as journeymen electricians, and they must have a given number of school hours to their credit before they can qualify.

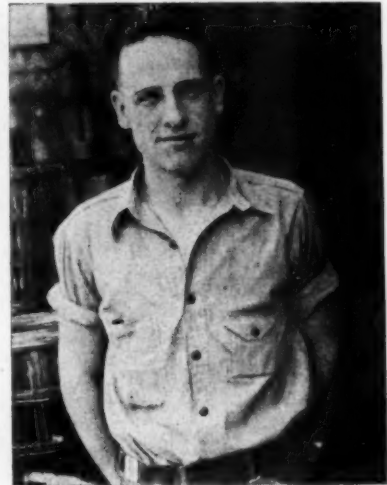
ONTARIO APPROVED MATERIAL

The Hydro Electric Power Commission of Ontario, Canada, has recently published the Second Edition, Supplement "D" to its list of approved electrical equipment for sale and installation within the Province of Ontario.

RESIDENCE MODERNIZATION PROGRAM

Detailed plans are being worked out by the Essex Electrical League of Newark, N. J., for a program of modernization of the home in Essex County, which campaign will start October 1 to continue until the end of the year.

The second annual electrical show sponsored by the league will be held at the old American Insurance Building, 70 Park Place, Newark, N. J., October 1 to 8 inclusive, and arrangements have been completed for



SPECIALIZES ON MODERNIZATION:—William Summerfield, East Peoria, Ill., is not the oldest contractor in town but nevertheless he has done some of the biggest jobs. His specialty is modernization.

unusual features, such as electric eye, television, electric ear, air conditioning, etc.

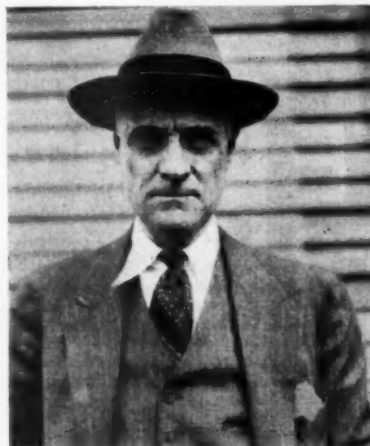
DEALERS LIABILITY FOR UNSAFE CORD

The Cord Manufacturers' Trade Extension Group of NEMA has secured legal opinion concerning the liability of a retail merchant who offers for sale electrical merchandise bearing unsafe cord. The opinion is as follows:

Generally speaking, a retailer, as well as a manufacturer, who offers goods for sale impliedly warrants that the goods shall be of "merchantable quality" and therefore warrants that they are not defective in such a sense that when put to the use for which they are designed they will be dangerous to persons or property. There have been more cases in which such liability has been applied to the sale of defective food than any other articles of merchandise, but the same principle is applicable to all goods offered at retail. It should be stated, however, that the law with regard to a retailer's liability in such cases is not as well settled as is the law with regard to the liability of manufacturers; nevertheless, the trend of authority is as I have stated.

In the cases where a specified article is sold under its patent or other trade name there is somewhat less danger of liability on the part of the retailer, but even in such cases he has been held to warrant the merchantable quality of the goods.

In your letter you say that various of the merchants referred to by you have been definitely warned that the cord is unsafe. I should say that these merchants very definitely expose themselves to liability not only under an implied warranty of merchantability but also for negligence in failure to heed the warning.



SERVES RUBBER FACTORIES SUCCESSFULLY: A. P. Jahant, Jahant Electric Co., Akron, Ohio, has been in the electrical construction business for 28 years. For the past 18 years his firm has specialized in power wiring, motor and control work for several rubber factories. Mr. Jahant has perfected several control devices of his own.



THIS BOOK WAS PLANNED *for you!*

IN it you will find the story of a new development of electrical science that meets the increasing demand for Fuseless wiring protection in the home. The old fuse box under the cellar steps is no longer a necessary evil. The new Westinghouse Nofuze Load Center, designed for the kitchen or other convenient place offers unfailing, tamper-proof protection without the inconvenience incident to fuse replacement.

In the Fuseless Home, a dangerous overload no longer means a candle-lighted trip into the base-

ment or an exasperating wait for the service man. Instead, the Flipon (small circuit breaker that replaces the fuse) guarding the overloaded circuit clicks open to protect the wiring. And when the overload has passed, a flip of the finger restores service instantly. There are no fuses to burn out . . . nothing to replace. This new device is as simple and safe to operate as the ordinary wall switch. And there is no longer any danger of the old familiar "penny-block" destroying protection.

Identify your name and business with this new development in home wiring. Mail the coupon.

Westinghouse

Quality workmanship guarantees every Westinghouse product



T 79292

SEND FOR BOOKLET

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.

Gentlemen: Please send me a copy of your circular "Fuseless Protection", C. 1956.

Name

Company

Address

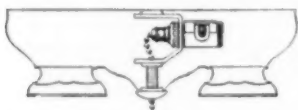
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The ORIGINAL FIXTURE SWITCH



No. 41 6 AMP.

**Unusual
Adaptability
in the McGill Levolver**

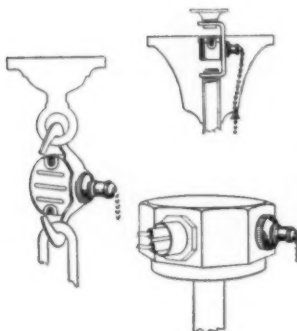


The six illustrations at the left show clearly what is meant when we say that the McGill LEVOLIER Switch has unusual adaptability.



For the pan type canopy, the LEVOLIER installs easily, no fuss, or bother. It remains firmly a part of the canopy itself.

Shallow canopies have for a long time been troublesome . . . but the thin McGill LEVOLIER fits snugly into this type as you see at the left.



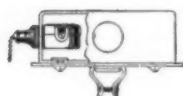
For ceiling fixtures, the LEVOLIER makes a rigid switch, permits straight down pull, and removes switching strain from the canopy.

Link Switch attachment installs easily, and is very practical where canopy switches are not required.

Insert the LEVOLIER in the knock-out of the conduit box.

Write for further information about the LEVOLIER No. 61 and 41 Switches, with full 6 ampere carrying capacity.

We'll be glad to send you the name of your nearest jobber.



Box No. 870

A ROLL O' TAPE

ELECTRICAL FLASHES
GATHERED AMONG THE
BIG WIRE AND PIPE MEN

BY

ELECTRICAL CONTRACTING'S
FIELD EDITORS

FRED KLENKE of Peoria, Ill., will not submit wiring figures on a house unless it includes fixtures that are to be used on the job. He claims that he has lost little if any work by this policy and has increased volume.

CERTAIN Florida contractor-dealers have given up their plan of selling electric ranges on a trial demonstration, hooked up with temporary wiring. This plan required considerable labor and a high investment in stock. Results did not warrant its continuation.

W. K. KEHR, proprietor of the Federal Electric Co. at Vallejo, Calif., is an aviation enthusiast and himself a licensed pilot. Last year he flew with L. Lenish in the Men's National Air Race. He owns his own plane.

AL. DeGroot of DeGroot and Allen Electric Co. of Green Bay, Wis., received a call from a customer whose lights went out. Going to the place personally and investigating the situation he found a weatherproof socket hanging out of a hole that was chiseled out of the conduit by a friend who was an electrician for some traveling circus that once hit the town. Yes, we sure need reinspection.

LAST fall the West Suburban Electrical Contractors Association division of the Electric Association of Chicago sponsored a residential relighting sales contest which lasted a period of eight months. Twenty-one members participated in the contest and the total number of ceiling and wall fixtures sold were 2558. Two prizes were offered to the two members who in that period would gather the greatest number of points rated on the number of units

FOR ATTRACTIVE INSTALLATIONS · SATISFIED CUSTOMERS

A COMPLETE LINE OF SWITCHES by GENERAL ELECTRIC

In selecting switches for wiring installations, you will find that G-E is in the best position to provide you with all types of switches to meet your requirements for each job.

You can depend upon G-E switches to give complete satisfaction. Each type of switch is correctly designed, and built

from quality materials with precision in manufacture. Mechanisms are rugged and dependable in performance.

Your nearest G-E distributor will be glad to furnish you with complete information on G-E switches or write Section D-329, Merchandise Department, General Electric Company, Bridgeport, Connecticut.

Tune in! Join the "G-E Circle" every weekday noon, Eastern Daylight
Saving Time (except Saturday) N. B. C. Network of 54 Stations

GENERAL ELECTRIC

WIRING DEVICES

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

Greater Profits Can Be Made With GREENLEE TOOLS



Hydraulic Conduit Benders

Greenlee Hydraulic Conduit Benders increase profits because they bend conduit quicker and easier than by other methods. In addition, they make smooth, even bends, eliminating many fittings and making it easy to pull in wire and cable. They are easy to take to the job, too, because they are portable.



Knockout Tools

Greenlee Knockout Punches and Cutters make it easy to enlarge holes in switch boxes, cabinets, etc. They form clean-cut holes quickly and accurately, without any reaming or filing.

Other Tools

Hydraulic Pipe Pushers
Joist Boreers Bit Extensions
Electrician Bits

Let Us Send Complete Information

GREENLEE TOOL CO.
ROCKFORD ILLINOIS

GREENLEE TOOL CO.,
ROCKFORD, ILLINOIS

Please send complete information on the following:

- ☐ Conduit Benders
☐ Knockout Tools

Name.....
Street.....
City.....
State.....
My Jobber is.....

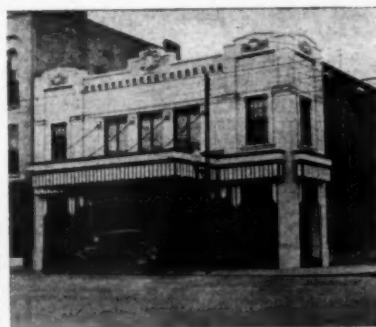
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sold. The recently announced winners, James E. Regan of the Regan Electric Co. of Oak Park, Ill., and Burt A. McClain of the Horton Electric Co. of La Grange, Ill., in the company of Ted Osberg president of the association, are now telling the boys about the nice trip they had to Bermuda and Camp Co-operation trip with expenses paid by the association.

A LONGMONT, Colorado, contractor tells me that he has quit making bids on competitive jobs and confines himself to repair work, creative selling of floodlights, window lighting and such big work as he can get on his reputation for good work at fair prices. "Extremely low bids coming in make the contractor offering a reasonable bid look like a price pirate," he says.

A KANSAS CITY contractor told me of a post office job near that city where quite a number of Kansas City contractors were invited to bid. According to reports not one of those invited bid for the work. While a contract with the government was satisfactory they refused to take a chance on getting their money from the general contractor who might or might not pay them after he had received his money.

PROBABLY the youngest electrical contractor, although he has been on his own for four years, is Frank Renwand of Sandusky, Ohio. Frank started helping his dad after school hours when he was 11 years old and when he was fourteen he had wired a house by himself. At fifteen he lost his father and helped his uncle to carry on with the business, taking it over at 18 under his



CONTRACTOR'S PLACE HAS THEATRE FRONT:—The Electrical Construction Company of Little Rock, Ark., has an unusually fine building with one of the largest fixture displays in the West. Before moving into the building some time ago they had it entirely remodeled, with especial attention to the front. As shown in the picture, this has a marquee which would do justice to a hotel or movie theatre. This company does a general wiring business with commercial work and radio service as its two major specials.



HARVEY UHL HEADS OHIO CONTRACTORS: Harvey T. Uhl, Akron, was elected president of the Ohio Electrical Contractors' Association at its recent annual meeting.

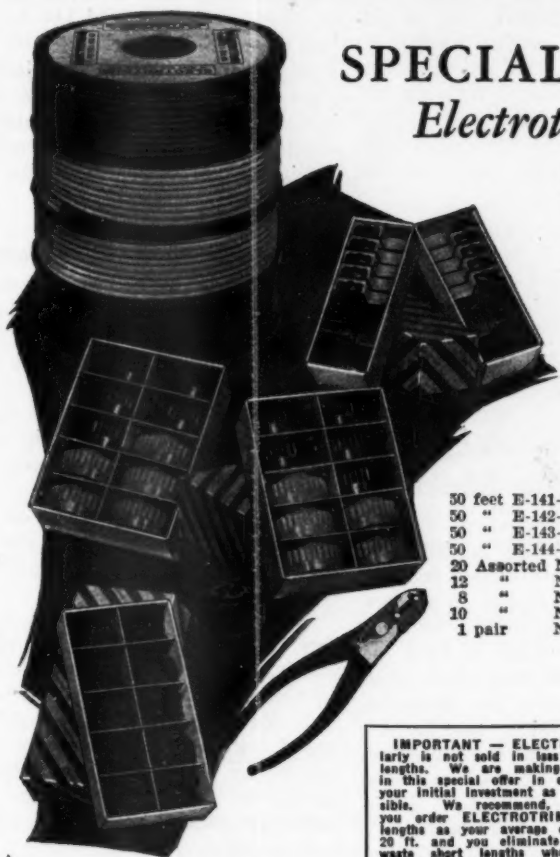
own name. To his prospects Frank is "just a kid" and he admitted that he certainly has to do a selling job, to sell the customer on the idea of his ability to do the job.

C. H. SIMPSON, Cheyenne, Wyo., says that about 30 per cent of his merchandising business comes as a result of friends gained in doing wiring work. Electrical stores have come and gone in Cheyenne and the only profitable set-up seems to be as a contractor-dealer. As such he is constantly in touch with the electrical needs of the town and gains the confidence of the customers to a degree that no straight merchandising business could attain. His customers know his journeymen and in many instances ask for them by name when work is to be done.

J. W. BARTLETT of Lincoln, Neb., puts up dynamo oil in whiskey flasks and displays it in the windows of his store. . . . And many a caller spits cotton balls on learning that the amber liquid in those flat bottles is oil.

C. F. OEHLER, Denver, says to me that the contractor with a store is doing his bit to aid the entire industry. Every attractive window display is a buying suggestion to the thousand or so persons who pass the store daily. Multiply this by the number of stores in this country and estimate the influence on the American public. Impulse buying is not confined to soft drinks, shoe shines, and candy bars. People are more apt to ask their electrician about that extra garage light if they pass his place of business on the way to work.

Electrotrim AWARDED Label of Underwriters Laboratories



SPECIAL INTRODUCTORY Electrotrim ASSORTMENT

Includes everything you need to go after this Big Profit Business

COMPLETE ONLY **\$23⁵⁰**

\$25.50 on Pacific Coast

You Make **35% PROFIT**
Plus Profit on Installation

ASSORTMENT CONSISTS OF:

50 feet E-141-2 3/4" width No. 14 Oak ELECTROTRIM	.....\$12.50 C Ft.	\$6.25
50 " E-142-2 3/4" " No. 14 Mahogany "	..... 12.50 C Ft.	6.25
50 " E-143-2 3/4" " No. 14 White "	..... 12.50 C Ft.	6.25
50 " E-144-2 3/4" " No. 14 Ivory "	..... 12.50 C Ft.	6.25
20 Assorted No. E-14-1, 2, 3, L Corner Caps	.....	2.00
12 " No. E-14-4, 5, 6, L Feed Thru Outlets	.....	4.20
8 " No. E-14-7, 8, 9, L End Outlets	.....	2.80
10 " No. E-120 P, S Attachment plugs	.....	1.50
1 pair No. E-14-0 Electrotrim cutters	.....	.75

Contractor Dealer's Discount, 35%..... **\$36.25**

Slightly higher prices on Pacific Coast

\$23.50

Also included in deal are

FREE Advertising Folders
FREE Display Card
FREE Sample Cards

IMPORTANT — ELECTROTRIM regularity is not sold in less than 100 ft. lengths. We are making an exception in this special offer in order to make your initial investment as small as possible. We recommend, however, that you order ELECTROTRIM in 100 ft. lengths as your average orders will be 20 ft. and you eliminate possibility of waste short lengths when you have ELECTROTRIM in 100 ft. lengths.



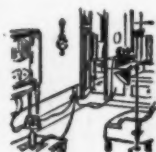
New Market Now Wide Open

Now you can reduce the cost of wall outlets 1/3 to 3/4 and actually INCREASE your profits!

Forty Million homes and offices need additional wall outlets—and will they buy them at this new low price? Just sell ELECTROTRIM and you'll have your answer!

ELECTROTRIM is certain to be one of the fastest turnover items on the electrical

contractor's shelf. Not a substitute for concealed outlets. ELECTROTRIM will be sold whenever concealed outlets are above the means of the purchaser.



Every Home Needs and Will Buy Electrotrim

Those who will profit most will be those who offer ELECTROTRIM FIRST... order your Introductory Assortment today... Find out for yourself what a fast moving, Big Profit item ELECTROTRIM is!

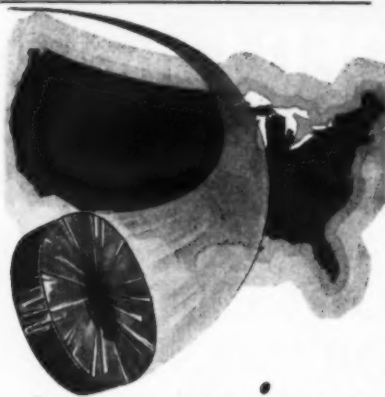
ELECTROTRIM, INC., Dept. E. C.-2, UNION CITY, IND.

Rush me your SPECIAL INTRODUCTORY ELECTROTRIM ASSORTMENT TODAY.

Name

Address

Send These Additional Quantities of ELECTROTRIM:



sweeping THE COUNTRY

A NEW broom sweeps clean but that isn't always true of a new friction tape. And when TWO new tapes appear and make a clean sweep from coast to coast, it is clear there is something different about them—something about their quality—something about their appearance and the way they are packed and displayed. Well there IS something different about Panther and Dragon Tapes. They are, first of all, backed by the name of Okonite and the unquestioned quality that this name represents. The standing gained through many years by our OKONITE RUBBER and MANSON FRICTION Tapes means a great deal in commercial tapes made by the same maker and bearing the same name.

Panther and Dragon Tapes, moreover, are presented in an exclusive cellophane wrapping and seal which is a practical preservative and always keeps them fresh. An individual green core continues to identify the product even when a roll is partly used.

It's no wonder they have swept the country. Order Panther and Dragon Tapes from your jobber today.



Hazard Insulated Wire Works
Division of
The Okonite Company
Passaic, N. J.

PRACTICAL METHODS

CONDUIT HANGER

The Central Electric Co. of St. Paul, Minn., for conduit hangers in concrete work uses an assembly such as here illustrated. The required parts for this hanger are two pieces of conduit of the desired length threaded at each end, two crow feet threaded on at the top.



Before the hanger is dropped through a hole drilled in the board two pipe sleeves are slipped over the conduit. These are used as spacers. The hole at the top of the crow feet is plugged with paper to keep out the concrete. The use of the pipe spacers also permits any necessary removal of the conduit from the slab by screwing it out of the crow feet. The cross bar is channel iron drilled for the size of the conduit. Lock-nuts on the conduit from below hold it in place.

PROVIDING FOR FUTURE CEILING EXTENSIONS

On the new Minnesota State Office Building being built in St. Paul and wired by the Common-



Ovalduct Rings Attached to Outlet Box

wealth Electric Co. provision is being made for future changes in locations of ceiling outlets through the use of ovalduct rings. There are about 1,500 ceiling outlets in this building. A standard galvanized outlet box is used with $\frac{3}{4}$ in. conduit which are set inside the slab. After the slab is trimmed two $\frac{3}{4}$ in. deep ovalduct rings are attached to the outlet box which extend $1\frac{1}{2}$ in. below the slab and are flush with the finished plaster. The metal lathing comes about $\frac{3}{4}$ in. below the slab, leaving $\frac{3}{4}$ in. of plaster which is channeled at any time for extensions or changes to be made with the use of ovalduct.

RUBBER BELTING PROTECTION

During the present period many industrial plants are shut down either wholly or in part, and date of reopening is indefinite. It is essential that rubber belting be protected from deterioration during the shut-down period if economical operating costs are to be enjoyed when plants are re-opened.

After an exhaustive study on the storage of rubber products, The B. F. Goodrich Company, Akron, Ohio, says in a recent bulletin:

"Belts should be stored in a dark, cool (not over 70 deg. Fahr.) place which is maintained under humidity conditions which are not too dry. This does not mean belts should be stored with one end standing wet, but the air of the warehouse should not be too dry. Direct sunlight and warm air should be avoided wherever possible.

"To further protect belting in storage the following preparation may be used to treat the edges and exposed face of belts in roll form:

- One quart shellac
- One pint alcohol
- One and one-half quarts household ammonia
- Three quarts water.

"This solution can be quickly applied with a whitewash brush. One gallon should cover about 300 sq. ft. It can be purchased already mixed, combined with special age-resisting chemicals.

"Where plant owners do not feel the shut-down period will be of sufficient duration to take off the belts and roll them up, it is suggested that the installation be checked to make certain tension has been removed."

' ' T H E Y K E E P A - R U N N I N G ' '



1/6 Horse Power Century
Type SP Split Phase Motor

Protected Design

The frame design of Century Type SP Split Phase Motors is an added feature that gives the windings and internal parts maximum protection against dripping water, dampness, falling materials, etc.

In addition, the Century Wool-Yarn System of Lubrication, assuring at least one year's continuous operation, without re-oiling, gives them the ability to "Keep-a-Running" under the most severe operating conditions.

They are built in standard horse power ratings from 1/60 to 1/3—open, enclosed, horizontal, vertical and flange mounting type. Particularly adapted to the operation of washing machines, oil burners, fans, blowers, unit heaters, small tools and similar apparatus.

Century
MOTORS

CENTURY ELECTRIC COMPANY, 1806 Pine St., St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century Motors are Built in Alternating and Direct Current, Single Phase, Polyphase, Split Phase, Multispeed and Special Motors Ranging in Size—Depending on Type—From 1/60 to 250 Horse Power, also Motor Generator Sets, Rotary Converters and Fans.

ED-21/6

FOR MORE THAN 28 YEARS AT ST. LOUIS

Autumn Markets for G-E FLOODLIGHTS



AUTUMN months are full of floodlighting possibilities. The open road is still thronged with tourists; city business is sprucing up for winter trade; in athletic circles, football is the major interest. It's a time to take advantage of these many opportunities to sell floodlights.

ROADSIDE BUSINESS

Filling stations and restaurants are continuing their highly competitive business. Take another trip through the suburbs, pick out the poorly lighted places, and show them the big publicity that floodlights bring at night.

BUILDINGS

At the same time, get after merchants, bankers, and owners of office buildings. The shortening days are an additional reason for advertising their buildings with floodlights.

MONUMENTS

Every city has unlighted monuments and memorials. Visit municipal officials and tell them about the attraction of proper floodlighting.

FOOTBALL

Evening football on a floodlighted field has been adopted by hosts of schools and colleges. You can easily interest athletic officials in the advantages of evening practice, evening games, and the increased "gate."

REMEMBER—you sell not only floodlights and lamps but also, as a rule, conduit, switches, transformers, and the work of installation. The General Electric Supply Corporation will back you up with the recommendations of G-E lighting specialists and "printed salesmen" for your promotional work. Address the nearest office of the G-E Supply Corporation; any other G-E Merchandise Distributor; any G-E Sales Office; or General Electric Company, Schenectady, N. Y.

710-163

GENERAL ELECTRIC



In actual comparison, Fretz-Moon Conduit bends 25% easier than ordinary rigid conduit. It also bends freely to any requirement without distortion, flattening at the bend, opening at the weld, scaling of the galvanizing or cracking of the glass-like enameled inner surface.

All three Fretz-Moon brands are free-bending—ENAMELITE, black enameled; ELECTRO GALVITE, electro-galvanized; HOT DIPPED GALVITE, hot galvanized by a special process.

FRETZ-MOON TUBE CO., INC.
BUTLER, PENNA.

FRETZ-MOON
RIGID CONDUIT

NEW—EASY WAY TO MAKE EXTRA MONEY —RIGHT ALONG

Selling Chromalox Replacement Range Units made \$210.36 in 4 weeks for this Reading, Mass. dealer.



GO AFTER REPLACEMENT RANGE UNIT BUSINESS with Chromalox Units. Clapp & Leach sold 54 units in 4 weeks. Altoona, Pa. dealer made \$136.50 in 2 months. Richmond, Va. contractor sold 48 units in 4 months, made \$187.20 profit. Chromalox replacement units are a money-making, depression-proof item. Range owners want to buy them. Easy to install, sizes to fit every make of range, old or new. Write for sure-fire sales plan already in use by dealers; Liberal discounts; free sales helps, etc. No obligation.

MAIL WITH YOUR BUSINESS LETTERHEAD TODAY! F. L. Wiegand Co., 7585 Thomas Blvd., Pittsburgh, Pa. Without obligation, send us complete data about Chromalox Super-Speed Replacement Range Units and how we can make money selling them. There are approx. elec. ranges in the territory we serve. Check which () We sell elec. ranges () We do not sell elec. ranges. () Send us catalogs about Chromalox-equipped electric ranges.

Signed Position

MINERALLAC PRODUCTS



HANGERS FOR CABLES & CONDUITS

Easily the best for quick, low-cost installation work. Send for full details and costs.

1 Hanger without Porcelain Bushing. Spring steel; stronger, quicker, more compactly arranged.

2 Hanger attached to steel beam with bolt and nut.

3 Jiffy Clip—quicker, neater work at less cost.

4 Cable Joint or Pot-head Compound—8 grades for every system, underground or overhead.



JIFFY CLIPS



Insulating Compounds

MINERALLAC ELECTRIC CO.

25 North Peoria Street, Chicago, Ill.

formal notice is sent that the work must be done at once or the city will take steps toward compelling action. This is at least inferred. Almost invariably this has the desired effect. While the inspector may be asked to recommend a contractor, he never does this for obvious reasons, but he does get in some more sales talk about the dangers of boot-leg work by irresponsible parties and keeps suggesting the licensed and responsible contractor who can be held responsible for his work.

Circumstances alter cases in this departmental work as in other fields. The code is specific and in most old buildings it would be possible, by following the letter of the law to find reason why practically the whole wiring installation should be done over. But we are in the midst of a depression, when building owners are cutting every corner. So it is the department's policy at this time to arrive at passably good conditions without incurring any more expense upon the part of the building owner than possible.

Re-inspection has been in the city ordinances for about 10 years, but it had degenerated into spot inspections which were getting nowhere in reality. As stated, it has only been a matter of six months since the department has got down to systematic work aimed at re-inspection every two years. So far, the results, with but one man detailed to the work, have been more than satisfactory. The benefits to the contractor are readily visible.



DOES LARGE MOTOR REPAIR WORK: Carl Wallin, of Omaha, Neb., is pushing the large motor repair end of his business. Sometimes he travels several hundred miles to some large power plant or pumping station. Before going into business for himself he was in charge of motor repairs for the James Corr Company, Omaha.

BEYOND THE TRADE-MARK?



AFTER ALL, it isn't a trade-mark that drives your machinery—it isn't the trade-mark upon which you rely for unfailing power in your plant. It's the motor! The famous Fairbanks-Morse trade-mark is the symbol of quality which a pioneer manufacturer of motors puts on his motors. But in all fairness to yourself—do not regard it or any other trade-mark as anything more than a symbol. After you have investigated, weighed construction advantages and performance records, then, and then only can you buy according to trade-mark.

These are times of changing methods. The best value of yesterday may not be today's. Old buying habits and impressions of motor values may not be accurate now.

FLEX-MOR DRIVE



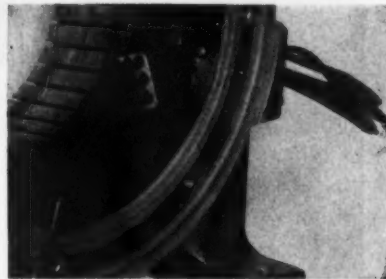
Use Flex-Mor for troublesome short-center drives. Replace long-center drives and conserve space while reducing transmission losses. Flex-Mor is durable; the silent, elastic drive reduces bearing pressures and requires no dressing or lubricant; unaffected by dust, dirt, moisture or atmospheric conditions.

So we invite you to look beyond the trade-mark and submit a Fairbanks-Morse Motor to the most exacting investigation you can make. In the column at the right are shown a few of the new unusual methods which are employed to make Fairbanks-Morse Type Q Motors give longer trouble-free service. The complete story of this extra value will be sent on request.

FAIRBANKS, MORSE & CO.
800 S. Wabash Ave. Chicago, Ill.

32 branches at your service throughout the United States

FAIRBANKS-MORSE MOTORS



1. Sealed-in leads. Through an opening in the frame—and there anchored permanently with a special sealing compound. The roughest kind of handling during installation or afterward cannot put strain on the stator winding connections.



2. Special cuff insulation. Empire cloth inside of two special pre-formed fibrous sheets is inserted in the stator core slots. An ingenious method of folding makes a self-locking cuff and gives permanent protection from slippage and added protection to the windings.



3. Group wound coils. A phase group winding from one piece of wire—reduces end connections and eliminates a source of mechanical failure. Lead connections from these phase windings are welded, not soldered or brazed. An innovation in winding construction that keeps motors out of the repair shop.



4. Every motor is given a thorough vibrometer test to make sure of proper running balance. Eliminate vibration and you reduce to a minimum the wear on bearings. Sealed-ball bearings and smooth running insure trouble-free service from F-M Motors under severest operating conditions.

5660—EA40.45

ANY CONTRACT IS A GOOD CONTRACT TODAY

Let These Books Help You
Get Your Share of the
Business Upswing



**Terrell Croft's
AMERICAN
ELECTRICIANS'
LIBRARY**

(6 volumes—over 2,000 pages—fully illustrated.)

You must be prepared to tackle any job that comes along if you expect to make money these days. This famous Library will make it possible for you to do so. Read about it, our Free book offer and the easy terms under which you can get these helpful books.

Six well-bound, handy volumes make up this Library. They are: 1. Conduit Wiring. 2. Alternating Current Armature Winding. 3. Electrical Machinery and Control Diagrams. 4. Lighting Circuits and Switches. 5. Circuit Troubles and Testing. 6. Electrical Machinery Erection.

DIAGRAMS

There are more than 1,000 clear, easy-to-follow wiring diagrams in these books. The wiring instructions are given in the language of practical electricians.

GENERAL

These books give you the actual "how" and "why" of every job you may be called upon to tackle, including repair work of every type. The methods these books give you are the quickest and surest methods—with Croft behind you you can handle new jobs perfectly. Remember, the man who is getting business and holding his own today is the man who knows more about the job than the next one. Here is your chance.

FREE BOOK

To encourage you to send your order for this Library NOW, we will give you, absolutely free of charge, a copy of Kuehn's Mathematics for Electricians upon receipt of your first small payment for the Library.

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Gentlemen: Send me for ten days' free examination, all charges prepaid, the AMERICAN ELECTRICIANS' LIBRARY, 6 volumes. If I find the books satisfactory, I will send you \$1.50 in ten days, and \$2.00 a month until the Special Price of \$17.50 has been paid. If they are not what I want I will return them. Upon receipt of my first payment you agree to send me a free copy of Kuehn's Mathematics for Electricians.

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(Books sent on approval in U. S. and Canada only.)

NEWS MANUFACTURERS

A DEPARTMENT FOR THE ANNOUNCEMENT OF ACTIVITIES OF MANUFACTURERS THAT ARE OF INTEREST TO CONTRACTORS, SUCH AS CHANGES IN EXECUTIVE PERSONNEL, BRANCH OFFICES, NEW PRODUCTS, ETC.

NEW AIR CONDITIONING SET-UP FOR WESTINGHOUSE

The formation of a complete organization for the engineering, development and sales of all air conditioning apparatus has been announced by J. S. Tritle, vice-president and general manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

This organization will study all types of conditioning problems, such as reversed refrigeration, cooling, humidifying, dehumidifying and air circulation and cleaning.

J. W. Speer, formerly manager of machinery electrification, has been appointed manager of commercial air conditioning products, diversified products department, in charge of the sale of commercial and railway air conditioning apparatus. R. C. Cosgrave, manager, refrigeration divi-

sion, will head the domestic sales, and W. C. Goodwin, supply engineering department, is in charge of the engineering and development.

MAHAN TO HEAD ELECTROTRIM SALES

Electrotrim, Inc., Union City, Ind., has appointed James S. Mahan, sales manager. Mr. Mahan, who was formerly field engineer for Steel and Tubes, Inc., was largely instrumental in securing the adoption of the new section of the National Electrical Code which recognized and regulated the use of non-metallic surface extensions.

L. E. Fuller was also appointed special field representative. Mr. Fuller was formerly with Steel and Tubes, and prior to that he was for a number of years with Economy Fuse.

Before leaving for the west coast, where he will set up a western distribution, Mr. Mahan announced that Electrotrim had secured Underwriters' Laboratories approval.

P & S ANNOUNCE MODERNIZATION WIRING DEVICE LINE

A complete line of wall plate wiring devices is announced by Pass & Seymour, Inc., Syracuse, N. Y. This new material, known as the P & S-Despard line, consists at present of 23 unit parts from which the contractor can assemble 59,244 different combinations on the job. There are no factory assemblies.

The line consists at present of 7 wall plates, 4 switches, 5 outlets, 2 plugs, night light, a pilot light, a box separator, a name plate holder and a switch-lock cover with key.

The manufacturers of the new line point to the compactness of the unit



NEW SALES MANAGER FOR KESTER SOLDER:—P. C. Ripley has been appointed general sales manager of the Kester Solder Co., Chicago, Ill. Mr. Ripley has been associated with Kester Solder Co. for nearly eight years, having been in charge of industrial sales and product development.

New businessright under your noses!

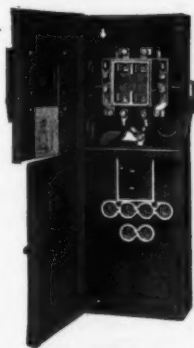
BEMOANING "conditions" never kept any electrical contractor out of "the red."

Alertness has pictured to many contractors a live market that existed *right under their noses*.

While waiting for the building trades to resume activity, look over the old home, school, institution, commercial and public buildings in your territory that have been operating with electrical installations that were good enough ten or twenty years ago but are *obsolete today*.

They are all receptive to the plan of **EXTENSION WIRING**—modernizing electrical installations—that they might take advantage of what today's ingenuity offers in modern electrical appliances and devices.

New electrical circuits mean new switches. Your wholesaler stocks the complete **COLT-NOARK** line, which will take care of every meter service and industrial type switch need.



No. 6636 RL6

The simplified service requirements of the 1931 Code are built into the new Colt-Noark meter service switches giving greater wiring economy.

COLT'S PATENT FIRE ARMS MANUFACTURING CO.

PIONEERS OF PROTECTION SINCE 1836

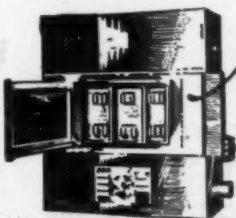
ELECTRICAL DIVISION HARTFORD, CONN.

BOSTON

CHICAGO

NEW YORK

PHILADELPHIA



EW-3-32

New circuits mean...

NEW SWITCHES



ARMSTRONG BROS.

Adjustable PIPE DIES
Cut faster—cleaner threads

Because chasers are "backed-off" they do not drag or tear threads. Made of special Vanadium Tool Steel, heat treated, hardened and oil tempered, these dies hold their sharpness. Features include: Correct Cutting Angle, Correct Throat Angle, Ample Chip Clearance. Fit all standard stocks of this type. Look for the Arm-and-Hammer Mark—it marks an improved die.

Write for **ARMSTRONG BROS. TOOL CO.**
Catalog "The Tool Holder People"
241 N. Francisco Ave., CHICAGO, U. S. A.

FLOOR BOXES
ORDER
"Latrobe"

CARRIED IN STOCK
BY OVER 300 DISTRIBUTORS

Fullman Manufacturing Co.
LATROBE, PA.

GET ACQUAINTED WITH THE LIBERTY LINE OF ELECTRIC SIGNALING DEVICES

BELLS
SINGLE-DOUBLE-COMBINATION BELL & BUZZER. VIBRATING AND DOUBLE MECHANISM.

BUZZERS
SINGLE AND DOUBLE COIL

PUSH BUTTONS

TRANSFORMERS

STANDARD AND OUTLET BOX TYPE
ENCLOSED AND FUSED

ELECTRIC DOOR OPENER

PROTECTIVE CABINETS FOR ALL TYPES OF BELLS

BURGLAR ALARMS

Mail coupon today for catalog and complete information.

LIBERTY BELL MFG. CO.,
Minerva, Ohio.

Please send me catalog and prices on the Liberty Line of High Quality low price signaling devices.

Name

Address

City

State

parts as the outstanding feature, an advantage which is secured through an original method of utilizing bakelite instead of porcelain for the molded forms. From one to three outlets, switches or any combination of unit parts may be assembled in a single-gang box; one to six may be assembled in a two- or three-gang box.

The fact is emphasized that this new material enables the contractor to approach wiring modernization jobs from a merchandise angle. Additional convenience and more outlets can be provided from boxes already installed, as for instance a pilot light, switch and outlet for the flat iron may be installed in the same single sidewall box which previously housed only an outlet, or a pilot light may be added to the remote control switches of cellar and attic circuits. Offering such extra conveniences to the householder at little cost and without making a "wiring job" of the operation opens the way to much modernization business, the manufacturers claim.

Complete information on the P & S-Despard line of "wall plate merchandise," together with revised data on all other P & S products, is contained in their new catalog 31, now in press.

STEEL AND TUBE CHANGES

J. D. Benfield, former Detroit representative of the electrical division of Steel and Tubes, Inc., Cleveland, Ohio, has been transferred to the position of Chicago district sales manager, with offices at 1224 McCormick Building, replacing L. E. Fuller, resigned.

H. R. Turrell has been appointed Detroit representative with offices at 956 Wanda Avenue, Ferndale, Mich., replacing Mr. Benfield. Mr. Turrell was formerly Detroit representative for the Crouse-Hinds Co. of Syracuse, N. Y.

Yaxley Manufacturing Co., a division of P. R. Mallory & Co., Indianapolis, Ind., has published an 8-page bulletin descriptive of Yaxley radio convenience outlets. This booklet contains descriptions and illustrations, as well as diagrams for radio wiring for the residence and apartment. Prices are also included in this bulletin.

The MARR

Only insulated wire connector with brass binding screw contact.

Approved by Underwriters

Buy from your local jobber
FREE Sample on request

Write
THE RATTAN MFG. CO., NEW HAVEN, CONN.
General Sales Agents
HATHEWAY & CO., 225 Varick St., New York City

IT'S PORTABLE

Carry the Martin Vice Stand and Pipe Bender with you... anywhere; set it up in one-half minute. Will not skid or tilt. A genuine TIME SAVER for cutting or threading conduit up to 2 1/2". Bending capacity 90". Write to

H. P. MARTIN & SONS
800 W. 12th St.
OWENSBORO, KY.

MARTIN
VISE STAND AND PIPE BENDER

THE P. R. MALLORY & CO.

FUSE - REDUCERS
SWITCHBOARDS
PANEL - BOARDS

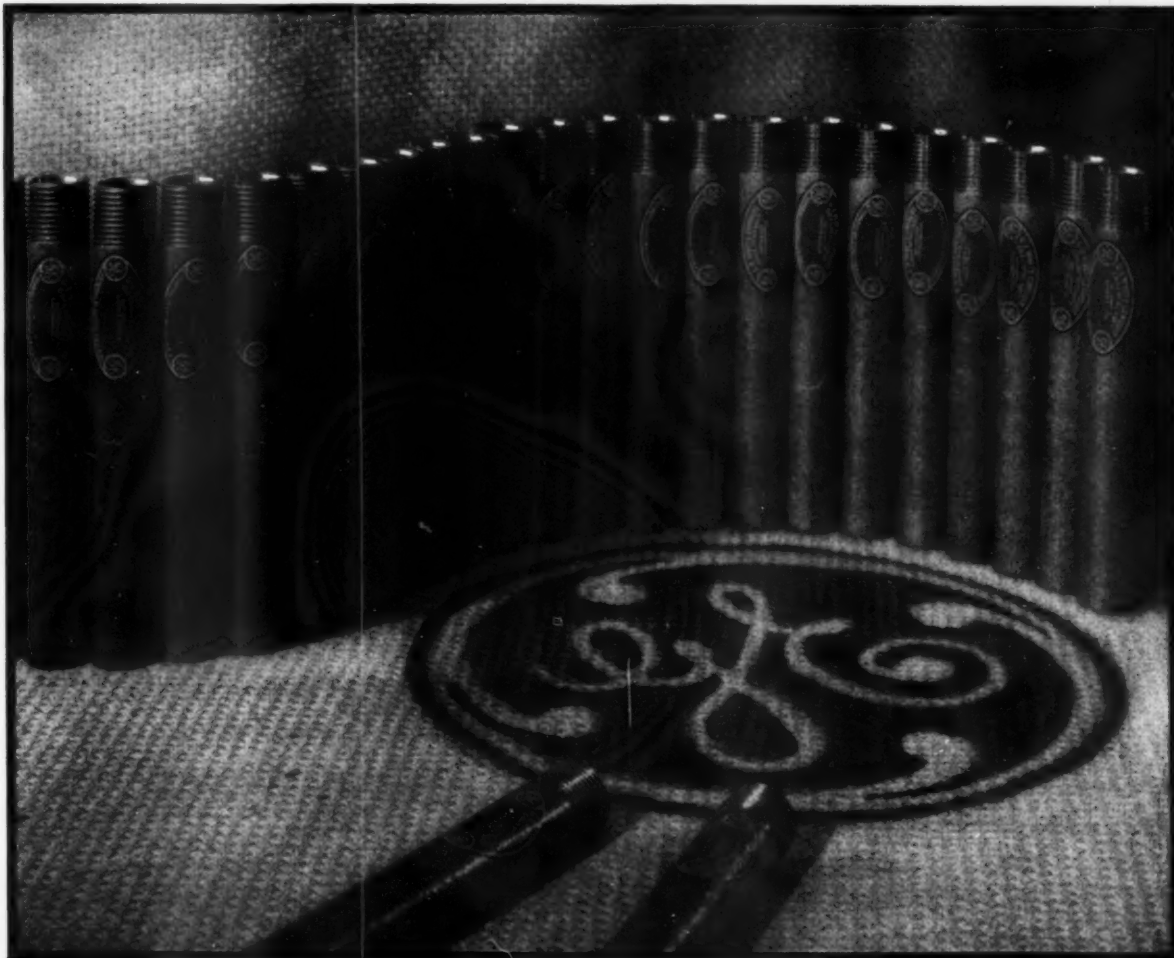
THE PLAINVILLE ELECTRICAL PRODUCTS CO.
PLAINVILLE, CONN.
Write for Copy of Catalogue

"STANDARDIZE ON STANDARD TRANSFORMERS"

ALL TYPES
Indoor and Outdoor Service

Send for
Descriptive Bulletin

STANDARD TRANSFORMER CO.
WARREN, OHIO



G-E WHITE

RIGID CONDUIT

made by GENERAL ELECTRIC

**FLEXIBLE
ALLOY STEEL**

for easy bending and
economical installation.

**HOT-DIPPED
GALVANIZED**

for permanence and maxi-
mum protection inside and out

**GLYPTAL
COATED**

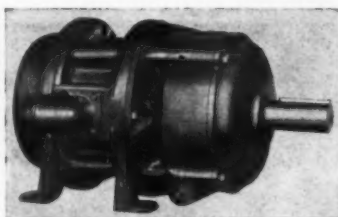
for extra long life
and easy wire pulling.

For information see nearest G-E Merchandise Distributor, or write to Sec. C-329, Merchandise Dept., General Electric Co., Bridgeport, Conn.
Tune in! Join the "G-E Circle" every week day noon, E. D. S.
Time (except Saturday) — N. B. C. Network of 54 stations.

GENERAL  ELECTRIC
RIGID CONDUIT

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

New Electrical Products



General Electric Co., Schenectady, N. Y., announces splash-proof induction motors designed particularly for application in which open-motor operation is handicapped by presence of splashing or dripping liquids. The top half of the end shields are solid to exclude dripping water and liquids; cooling air enters through ventilating openings in bottom half of end shields; a special baffle, which extends to center line of motor shaft prevents entrance of splashing water into the windings. Motor frame has a one-piece cover, fitted to the motor frame, and a water-tight conduit box protects motor leads against dripping or splashing water. The ventilating air, which enters through end shield openings, is circulated over end windings, across motor frame and out through louvers in protective cover.



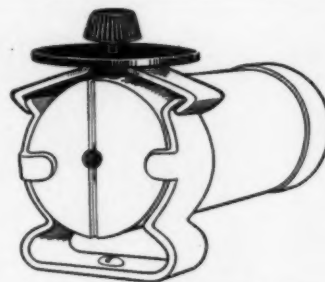
A pocket size foot-candle meter, Model 614, is announced by Weston Electrical Instrument Corp., Newark, N. J. These meters, built especially for salesmen's use, is calibrated to read directly on 3 ranges; 50, 250 or 500 foot-candles. One cell is used as an adjustable light collector, with readings appearing on a scale 2.36 in. in length. Cell and instrument are housed in a neat, black, moulded case, measuring approximately $3\frac{1}{2} \times 7 \times 2\frac{1}{4}$ in., equipped with a hinged cover and a strap handle. Operating equipment consists of an indicating instrument, a 3-way toggle switch and a photronic photo-electric cell all mounted on the bakelite panel. The photronic photo-electric cell or light target is hinged so that it can be lifted from the horizontal to the vertical position.



Model 17, combination power amplifier unit for sound application, including airport, sound truck, amusement park and dance hall installations requiring up to 15 watts undistorted power output, has been announced by the Operadio Manufacturing Co., St. Charles, Ill. Control panel of the amplifier has provision for microphone, radio and phonograph inputs. Operating switches and volume controls for each input, amplifier tone control and all input connections are segregated on separate unit that may be removed from amplifier housing when remote control operation is desired. Amplifier and control box are normally mounted in crystalac-finished metal case provided with carrying handles and snap cover fasteners. Amplifier may be slipped out end of case for inspection, and knock-out holes in case provide for conduit wiring. Extension cables up to 500 ft. in length may be used without affecting operation of amplifier.



The Rawlplug Co., Inc., New York City, announces the addition of Rawl-Anchor to its line of screw anchors, masonry drills, and screw, bolt and nut crowners. Unit is a one-piece, heavy-duty, double expanding masonry anchor for bolts, that has a double inverted cone body of aluminum which is used as the expanding factor. Among its many features are one-piece fool-proof construction, no top or bottom, and either end may be inserted in the hole. The ductile aluminum collars top and bottom spread upon being caulked and completely seal the hole. Bolt will not turn in the hole as bolt head imbeds itself in the ductile aluminum collar when caulked, and as only one unit is used for any size bolt, there is but one caulking operation needed.



Leonard fuse tighteners for eliminating burned out fuses annealing of clips, charred fuse barrels, etc., are announced by The Leonard Electric Mfg. Co., 3901 Perkins Ave., Cleveland, Ohio. These adjustable spring clamps slip over fuse clips and tighten the contact of ferule-type cartridge fuses, resistors, etc., by means of an insulated button screw. The metal is coated with an insulating compound. Ratings are 30A, 250 volt; 30A, 600 v., 60A, 250 v. and 60A, 600 v.

The Rockwood Manufacturing Co., Indianapolis, Ind., is now manufacturing the Rockwood Belt-Pull for reconditioning worn belt surfaces, increasing pulling capacity and prolonging belt life. Belt-pull is applied from the handy tube direct to the belt while drive is running. Manufacturers state that due to the fact that this belt-pull contains no grease, oil or wax, it is particularly desirable for rubber belts, although it is equally effective for leather belts that have become dry and glazed, and that it does not cake on belt or pulleys. It was originally developed for farm machine drives, which are subjected to exposure to the weather and to dust, but it can also be used in industrial plants.



Century Electric Co., St. Louis, Mo., has recently added new ratings to its line of split phase motors, built in ratings from 1/60 to 1/3 hp. End brackets of motors are cast from close grained grey cast iron, and are designed to protect motors from falling objects, dust or dripping water. Frames are of rolled steel construction. Bearings are machined from phosphor bronze castings and thick-walled.



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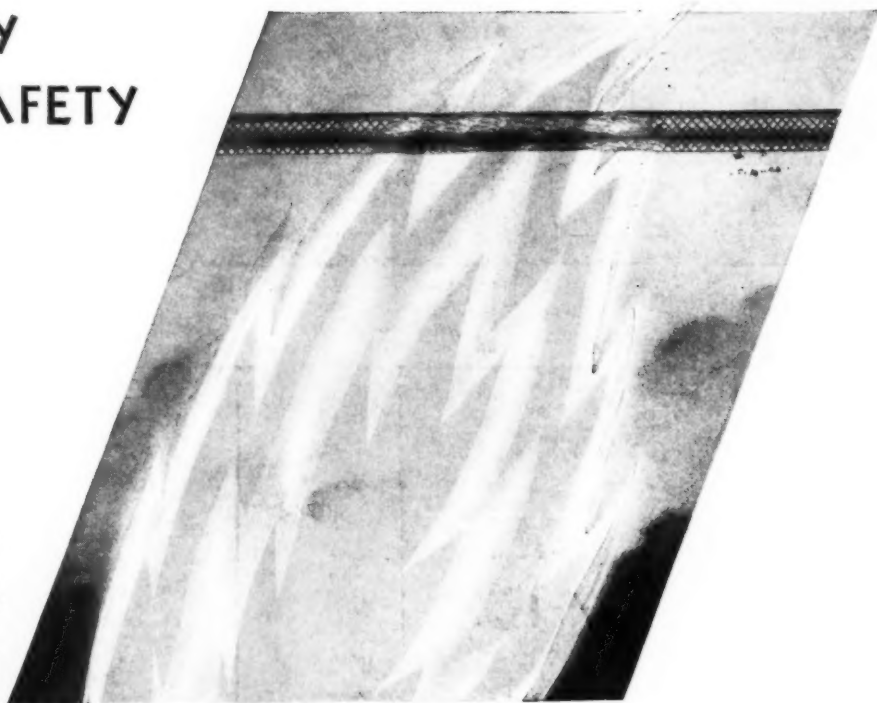
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